REPORT RESUMES

ED 003 314 24
A COMPARISON OF PROGRAMED AND STANDARD TEXTBOOKS IN COLLEGE INSTRUCTION.
BY- FISHER, MARGARET B. MALPASS, LESLIE F.
UNIVERSITY OF SOUTH FLORIDA, TAMPA
REPORT NUMBER CRP-1921 PUB DATE 63
EDRS PRICE MF-$0.18 HC-$4.64 116P.

DESCRIPTORS- *PROGRAMED INSTRUCTION, *EDUCATIONAL EXPERIMENTS, COMPARATIVE ANALYSIS, *PROGRAMED TEXTS, *CONVENTIONAL INSTRUCTION, *COLLEGE STUDENTS, STATISTICAL ANALYSIS, TAMPA, FLORIDA

THIS STUDY WAS DESIGNED TO DETERMINE WHETHER SIGNIFICANT DIFFERENCES OCCUR IN MASTERY OF A COLLEGE COURSE LECTURE-DISCUSSION TYPE FOR FRESHMEN AND SOPHOMORES WHEN STUDENTS USE PROGRAMED MATERIALS OF INSTRUCTION RATHER THAN STANDARD TEXTBOOKS. FOUR STANDARD AND FOUR PROGRAMED SECTIONS WERE USED FOR COMPARATIVE PURPOSES. STUDENTS SELECTED THESE SECTIONS WITHOUT ADVANCE NOTICE OF INSTRUCTIONAL TECHNIQUE. COMPARISONS WERE MADE BETWEEN THE SECTIONS AND OTHER RELEVANT SUBGROUPS BY APPROPRIATE STATISTICAL MEASURES, WITH GRADES BEING THE PRINCIPAL CRITERION FOR SUBJECT-MATTER MASTERY. FEW SIGNIFICANT DIFFERENCES IN MASTERY OF SUBJECT MATTER WERE FOUND BETWEEN STUDENTS IN THE TWO MAJOR GROUPS. SEVERAL DIRECT EXPRESSIONS OF PREFERENCE FOR PROGRAMED MATERIAL WERE OBTAINED, HOWEVER, SOME STUDENTS FELT THAT PROGRAMED MATERIAL DEMANDED MORE TIME AND STUDY THAN THEY WISHED TO GIVE, AND SEVERAL STUDENTS IN STANDARD SECTIONS EXPRESSED RESENTMENT OF AN ADVANTAGE IN PREPARING FOR MULTIPLE-CHOICE EXAMINATIONS THAT THEY FELT MUST ACCRUE TO STUDENTS USING THE PROGRAMED TEXTBOOKS. THE PREFERENCE FOR VERTICAL OVER HORIZONTAL PROGRAM FORMAT WAS EXPRESSED VERY STRONGLY. (LP)

U. S. DEPARTMENT OF HEALTH, EDUCATION AND WELFARE
Office of Education
This document has been reproduced exactly as received from the person or organization originating it. Points of view or opinions stated do not necessarily represent official Office of Education position or policy.

A COMPARISON OF PROGRAMED AND STANDARD TEXTBOOKS IN COLLEGE INSTRUCTION

Cooperative Research Project No. 1921

Margaret B. Fisher, Ph.D.
Leslie F. Malpass, Ph.D.

University of South Florida
Tampa, Florida

1963

The research reported herein was supported by the Cooperative Research Program of the Office of Education, U. S. Department of Health, Education, and Welfare.

ED 003314

PRECEDING PAGE BLANK-NOT FILMED

ACKNOWLEDGEMENTS

The investigators have enjoyed the support and encouragement of several institutions and individuals. The U. S. Office of Education provided the major part of the financial support needed. The advice and encouragement of its staff were most valuable. The University of South Florida (President John S. Allen) shared in financial support, and provided the time and facilities required for processing data and preparing the report. The interest and encouragement of this study by the officers and staff of the University reflect its generally strong research orientation.

Dr. Vernon Edmond generously assisted, not only in teaching two of the experimental sections during the spring term, but also in advising on the preparation of instruments for student and course evaluation. Dr. David Leonard served as consultant on data processing and analysis. Consultation was generously given by others, particularly the Center for Programed Instruction, New York City, Dr. James Holland, Harvard University, and Dean Edwin P. Martin, University of South Florida.

Mrs. Martha Hicks served as research assistant during the first phase of the study, and contributed valuable suggestions and service. Mrs. Ann Hirshberg served as research assistant in the final phase and kept a watchful eye on form and style of the final report. Dr. Donald Harkness kindly read the study and made valuable editorial suggestions.

Classroom observations were directed by Mrs. Hicks. Cecil Brooks, Director of Admissions, and Judy Harris, student assistant, also served as observers. Mrs. Hicks and Mrs. Hirshberg rated the impressionistic reactions, with Ruth Jones and Martha Simkaitis as student assistants.

Statistical work was done by R. Gabe Ayala and Martha Simkaitis, under Dr. Leonard's advice and supervision. Stenographic assistants were Valetta Scribner, Marjorie Broadstreet, and Maxine Mockabee. Their attentiveness to detail and accuracy, and their enthusiasm for the work, added much to our pleasure in the study.

TABLE OF CONTENTS

	Page
ACKNOWLEDGEMENTS	iii
LIST OF TABLES	vii
THE PROBLEM	1
Related Research	2
Objectives	8
PROCEDURE	11
The Population and Experimental Groups	12
Sampling Considerations	13
Instructor Selection	16
Instructional Methods	17
Student Evaluation and Course Evaluation	19
Comparability of Classroom Atmospheres	20
Summary	23
RESULTS	25
CONCLUSIONS	41
APPENDICES	55
REFERENCES	107

PRECEDING PAGE BLANK-NOT FILMED

LIST OF TABLES

Table		Page
1	Chi-square Analysis of Difference Experimental/Course Population	15
2	Grade Indices	26
3	Impressionistic Reaction Ratings	29
4	Frequency of Selection as Most Valuable of Five Teaching Techniques	37
5	Frequency of Selection as Least Valuable of Five Teaching Techniques	37

A COMPARISON OF PROGRAMED AND STANDARD TEXTBOOKS IN COLLEGE INSTRUCTION

Cooperative Research Project No. 1921

Margaret B. Fisher, Ph.D.
Leslie F. Malpass, Ph.D.

THE PROBLEM

The major purpose of this study was to compare some results of programed textbook instruction with those of conventional textbook instruction in a general education college course. The problem derived from two major sources: (1) interest in the application of principles of operant learning theory to programed textbook instruction; and (2) the question of whether programed textbooks should be used as principal sources of information for students enrolled in a university behavioral sciences course.

Programed instruction is of interest to many educators. Compared to conventional instruction, it appears to afford greater latitude for individual differences in rate of learning progress, an increased degree of self-instruction, and savings in time and money. In general, it is assumed that students learn at least as much by programed instruction as by conventional pedagogical methods, but more efficiently. This study was designed in part to test that assumption.

It also was designed to evaluate related variables, such as the way in which differences in general intellectual ability, previous achievement and the impressionistic reactions of students may have influenced response to the differing modes of instruction and to their instructors.

Related Research

Programed instruction has roots in theories of education as well as in psychological learning theory. For example, the Socratic dialogue demands (1) presentation of stimulus items (questions or comments by the "teacher"), (2) to which the student responds. The responses themselves (3) are reinforced by additional questions or comments from the teacher, which (4) are designed to inform the student directly or indirectly of the adequacy of his response, so that (5) he makes fewer errors and thus learns more effectively. Questions are asked, information is given, or comments are made by the teacher in incremental steps, so there is a gradual accumulation of knowledge or wisdom from the educational encounter. These steps essentially are cited by Skinner (1958), Stolurow (1961) and Schramm (1962) as those comprising the basic elements of programed instruction.

Long before a mechanical apparatus for teaching was conceived, Comenius and Pestalozzi had specified the necessity for "active education" -- the kind that requires the student to learn more and the teacher to teach less. Consistent with this idea, Halcyon Skinner developed and patented a "spelling machine" in 1866 (Mellan, 1936). About 1873, Jevons (1958) designed a "logic machine" to give solutions to problems presented symbolically. In 1915, Ordahl and Ordahl (Stolurow, 1961) built a simple teaching machine for use with retarded children. All of these efforts were completed under the rubric of educational theory and enterprise rather than psychological learning theory. Many aspects of Dewey's functional philosophy of education rely on these basic educational principles. All these endeavors provide an historical context for the contemporary development of programed instruction.

If principles of programed instruction are rooted in a long history of educational theory and practice, then current methods of programed instruction are derived principally from psychological learning theory. Pavlov, Thorndike, Hull, Guthrie, and B. F. Skinner have all demonstrated the significance of relationships between stimulus and response. They and their students have investigated principles of learning such as latency, reinforcement, generalization, and extinction, and have shown how they affect stimulus-response relationships.

Pressey (1926, 1927, 1950) appears to have been the first psychologist to apply these principles to programed instruction. His "punchboard machines" did not excite much interest from educators when they were first introduced. However, during World War II, in teaching a variety of skills, military services utilized principles of reinforcement, and employed punchboards and similar means of providing immediate knowledge of results. These teaching devices were developed mostly by psychologists (English, 1942). B.F. Skinner's major contribution, reported in the late 1950's, was to construct and demonstrate an effective and usable mechanical teaching device which makes maximum use of some simple secondary reinforcement, such as knowledge of results, or a light or sound signal (Skinner, 1958A, 1958B). His reports gained wide recognition and were responsible for interesting many other psychologists and educators in programed instruction.

Galanter (1959), Lumsdaine and Glaser (1960), Stolurow (1961) and Schramm (1962) have provided comprehensive analyses of the Skinnerian system of programed learning. This system has been used at every level from pre-school to graduate study (e.g. Taber and Glaser, 1962; Green, 1962), with mature, superior students as well as retarded children (e.g. Jensen, 1949; Malpass _et al_, 1963). It has been utilized to teach a wide variety of subject matter and skills -- spelling, reading, and English; machine operation, military weaponry, and electronic trouble-shooting; mathematics, genetics, and psychology; library use, telephone exchange operation, and business decision-making; concept formation, foreign languages, and deductive logic. A host of other industrial, business, and military operations, and studies relating to these, are cited in the reviews listed above.

Programed instruction has been provided in a variety of forms: by flash cards and film strips; by fully automated, semi-automated and simple roll-type teaching machines; and by programed textbooks with horizontal framing (e.g. Holland and Skinner's _Analysis of Behavior_) and vertical framing (e.g. Markle's _Primer for Programed Learning_).

Schramm (1962) has indicated that, although comparisons of programed instruction with conventional instructional methods are difficult, and that the danger of the "Hawthorne effect" of novel presentation conditions does exist, investigations consistently have indicated that programed instruction compares very favorably to conventional instruction. For example, Porter (1959) reported that elementary school pupils learned spelling words better by teaching machine than by ordinary classroom instruction. Malpass _et al_ (1963) found that retarded children learn and retain word recognition, reading, and spelling more effectively with automated instruction than with classroom teaching. Skinner and Holland (1958) indicated that college students demonstrate more efficient learning and better recall of psychology course material under teaching machine programs than under lecture-discussion methods. Arnold Roe _et al_ (1960) have reported that (1) teaching machines of different kinds, (2) programed textbooks of both linear and scrambled varieties, and (3) programed lectures (i.e. those presenting material in sequence and requiring active responses from hearers) all resulted in better learning of probability statistics by freshman engineering students than did conventional lectures. The last-named study is one of a very few which contrast programed instruction with conventional classroom teaching.

The studies cited demonstrate "total replacement" effects in instruction. That is, in these studies programed materials were used to replace conventional classroom instruction entirely. At the beginning of the present study, there were no reports available about the effects of "partial replacement" on learning, e.g. replacement of standard textbooks with programed textbooks without altering other aspects of conventional instruction such as lectures and class discussion. The investigators wanted to examine such effects. During 1960-61, a programed textbook had been used along with some standard textbooks in two sections of a multi-section behavioral science course. Instructors and students reacted so favorably that it was decided to evaluate the achievement and impressionistic reactions of larger numbers of students to programed textbooks used as the major texts in the course.

In short, it was felt that this study could augment information available from previous research about the comparative reactions of college students to programed textbooks and standard textbooks. It was presumed that results of the study could be generalized at least to general education courses at the undergraduate level, particularly in the behavioral and social sciences. In addition, the study would provide objective data about reactions of university students to programed instruction.

Objectives

The present study was designed to deal with several instructional problems. The formal objectives were stated in terms of two null hypotheses:

(1) No significant differences will be found in the mastery of subject matter (as measured by grades) between students using programed textbooks and those using standard textbooks in a college course.

(2) No significant differences will be found in impressionistic reactions to a college course between students using programed textbooks and those using standard textbooks.

The following related questions were of concern to the study and it was expected that answers to some of them might be obtained:

(1) If differences in grades are observed to result from the two methods of instruction, are they related to other variables, such as general ability level or academic aptitude, previous patterns of achievement, and/or academic

and vocational objectives?

(2) If differences in grades are observed between instruction groups, will they be related more to grades given by the instructor than to grades earned on an end-of-course objective examination?

(3) If differences in grades occur between the two groups, will they be related to impressionistic reactions of students to the two texts?

(4) Will there be differences in reactions to the two types of programed textbooks within the programed textbook group?

The study differs from other investigations in the area of programed learning in that one student group using programed textbooks (rather than teaching machines) was compared with another using standard textbooks containing essentially the same information. It differs also in that both student populations were exposed to the same weekly lectures and attended two one-hour discussion periods. The principal dependent variable was the method of learning textbook material; other kinds of traditional instructional methods were the same for both student groups.

PRECEDING PAGE BLANK-NOT FILMED

PROCEDURE

The course chosen for the research, Human Behavior, is a two-term interdisciplinary course in the behavioral sciences. It is one of seven interdisciplinary courses in the College of Basic Studies at the University of South Florida, Tampa. Every student at this university must complete six of these courses in the freshman and sophomore years, as part of the lower division requirements in general education for the Bachelor of Arts degree.

The content of the course is organized around the focal concept of social learning theory. Beginning with biological determinants of behavior, the course continues with respondent and operant conditioning theory, learning as a determinant of personality development, and the effects of social stratification, family, school, religion, cultural institutions and values upon learning (See Appendix A).

The content of the course, with its emphasis upon learning theory, makes it singularly appropriate for the study of programed methods in learning. But in its selection there were also some practical interests involved. A programed text was already available, The Analysis of

Behavior (Holland and Skinner, 1960) having been used on a trial basis in the 1961-1962 academic year. However, it was not wholly suitable for covering the content of the course. As a result, the staff produced its own programed textbook, in two volumes, one for each term, keeping Holland and Skinner as the primary textbook for the section on operant learning theory. Both textbooks were introduced in 1962-1963 for all sections of Human Behavior. The opportunity thus was present for a thorough comparison between programed and standard texts, with a large population for which programed material was unfamiliar. The Development of Human Behavior (Dewey and Humber, 1951) was retained as the standard text for the full year. Supplementary paperback texts and reprints were also used (See Appendix A).

The Population and Experimental Groups

About ninety per cent of University of South Florida students select Human Behavior as one of the required general education courses for completion of degree requirements. In 1962-1963 about 1300 students entered the university, and 1157 students were enrolled in Human Behavior. The group enrolled in the course accordingly can be regarded as representative of lower division enrollment in a large urban southern public university.

From this population, an experimental group was chosen: in the first term, two class sections (N = 72) using programed textbooks were compared with two sections (N = 70) using standard textbooks; in the second term, two programed sections (N = 64) were compared with two standard sections (N = 58), giving eight sections enrolling a total of 264 students as the population used in the study.

Sampling Considerations

When standard statistical procedures are used in research, it is customary to choose an experimental group by arbitrary assignment of a random sampling of students. There probably are sound practical reasons in many universities for avoiding arbitrary administrative action, even in institutional and instructional research; and perhaps such reasons limit the development of research in instructional methods in colleges and universities. At the University of South Florida in 1961, there was a small but active demonstration of resistance to any alteration of registration procedures, and insistence on the right of the student to select sections as well as courses. Since the investigators did not wish to assess student resistance, they had to build experimental sections within regular registration procedures which did not permit random selection of students.

Sampling bias was reduced as far as possible by the exercise of common sense controls. Experimental sections were scheduled at two consecutive hours in the early afternoon, in order to obtain a sample as representative as possible of commuter and resident students, part-time employed students, and men and women.

Chi-square analysis of difference was used to determine whether the experimental sections were representative of students enrolled in Human Behavior in 1962-1963 as to cumulative grade point ratio, course grades in CB 103-104 that year, and total Florida Twelfth Grade Test scores; and to compare experimental sections with total university enrollment as to men and women, resident and commuting students. Table 1 indicates that the experimental sections secured in the ordinary process of registration proved to be a representative sampling (See also Appendix B).

TABLE 1

CHI-SQUARE ANALYSIS OF DIFFERENCE EXPERIMENTAL/COURSE POPULATION

MEASURE	x^2	p	df = 1
Sex (Male/Female)	0.156	.70	
Residence (Commuter/Hall)	0.198	.70	
Cumulative GPR (Experimental/Total Pop.)	0.119	.70	
Course Grade, CB 103, Term I (Experimental/Total Pop.)[1]	1.333	.30	

[1] Used for Term II students only; not available for Term I.

Bartlett's Test of Homogeneity was employed in order to determine whether there was a homogeneous population within the experimental sections, that is, whether programed and standard sections could in fact be regarded as being composed of similar groups of students. Scores on the Florida Twelfth Grade Test battery and the University of South Florida Entrance Test battery were compared. These yielded B values significant at the .01 level of confidence only on the Natural Science and Mathematics tests (FTGT) in Term II (See Appendix C). On all other tests of the FTGT battery, no significant differences occurred between the groups in Terms I or II.

No significant differences occurred between programed and standard textbook groups on any test in the University of South Florida Entrance Test battery (See Appendix D).

Observed differences among experimental groups are represented by only two significant B values among twenty test scores. The sampling much more closely approaches statistical adequacy than might be expected, considering the large number of test scores employed and the absence of prior control of sampling through registration procedures. Readers who are concerned with research on classroom instruction may be interested in the finding that a satisfactory experimental population was secured without departing from ordinary registration procedures.

Instructor Selection

Since names of instructors in this course were not available until after registration, there was no chance for bias due to the attempt of students to select a particular instructor. The three instructors used in the study were selected to meet certain criteria controlling other types of bias as far as possible. Their professional backgrounds and teaching experience were similar. Each one had at least two years' experience in teaching Human Behavior at the University of South Florida. All were familiar with both programed and standard texts. All had both teaching and research experience in behavioral sciences. In order to limit possible sex bias, the only woman on the staff satisfying these desiderata taught in both terms; from five men satisfying the criteria, one was chosen to teach the first and another the second term.

Each instructor taught one programed and one standard section. During the first term, programed sections met the first hour, standard sections the following hour; in the second term, one programed and one standard section met each hour.

Instructional Methods

All students taking Human Behavior attended one lecture-demonstration per week. In 1962-1963 several different lecturers participated, each lecture introducing a basic concept in the course and covering recent relevant research over and above that available in the textbook and supplementary readings. Experiments in animal behavior, respondent and operant conditioning, child development, family relationships, social conflict, and other aspects of the course were covered in films, demonstrations, role-playing, and closed-circuit TV presentations, as part of the lecture-demonstration series.

Discussion sections met for one hour twice a week. In the experimental sections, as in all other sections, the content of discussion was determined by the participants, being drawn from unresolved questions, personal interests and experiences, experiments, demonstrations, and class projects.

A wide variety of instructional methods was used in the experimental sections: e.g., a statistical analysis of attention span as related to study schedules of members of the class; a series of answers by the instructor to written questions from the class on personality theory; making a "do-it-yourself" political propaganda kit; structured panel discussions; and other techniques.

It was assumed that students had read the text and attended the lectures before coming to discussion periods. During both terms of the study, instructors in experimental sections met each week to discuss plans and topics, in order to maintain as much similarity in content and instructional methods as possible, while enabling sections to have the desired variety in interest. In Term II a team of three observers visited the four class sections and independently compared content, method, and classroom atmosphere. Their ratings were not made known to the two instructors until the end of the term. They demonstrated that instructors did maintain similarity in teaching methods and in topics used in their respective sections (Appendix F).

Student Evaluation and Course Evaluation

Instructors in experimental sections jointly constructed achievement tests, making sure that all four sections had covered the concepts to be included in lecture, text, or discussion. The same tests were administered on the same day in programed and standard textbook sections. Each instructor graded students on the basis of tests and classroom performance, filing his grade as an Instructor Index on a fifteen-point scale (A+ to F-). The Instructor Index counted for half the course grade for each student.

All students in Human Behavior take a common final examination, which counts for half the course grade. Raw scores are converted to an Examination Index, on the same fifteen-point scale.

The sum of these two scores (the Instructor Index and the Examination Index) is then converted to a letter grade for the course, following the A-B-C-D-F scale in general use among universities.

This grading method is standard procedure in all courses in the College of Basic Studies, and was followed in the experimental sections along with all other sections of Human Behavior.

All students are encouraged to evaluate the course, at the end of the term, using a questionnaire locally prepared for use in all courses in the College of Basic Studies, and available to all other instructors in the University. In addition, students enrolled in the experimental sections of Human Behavior were asked to write open-ended impressionistic reactions to the course, with texts, lectures, and discussions being suggested as examples of elements to be evaluated. These reaction reports were scored on five-point rating scales by a team of four readers (Appendix B).

Comparability of Classroom Atmospheres

The use of discussion method drawing largely on student interests and questions made it impossible for any two sections to cover identical content in identical fashion at the same time. However, it was possible to check on the degree of similarity among experimental sections in terms of topics, procedures, and atmosphere. Three observers (an upperclass honor student, a former instructor in Human Behavior, and the Director of Admissions) made four visits each to all four sections during March 1963, and their observations show a high degree of similarity among the sections.

Class discussion was consistently rated "well-organized" despite the varied interests and materials introduced (Appendix F). The class atmospheres were rated by observers to be quite consistent from one section to another. Both instructors were most frequently rated "warm and accepting" in general demeanor, "spirited and stimulating" in presentation, sometimes "impersonal" in demeanor, "effective but not animated" in presentation. Neither was rated "critical", "hostile", or "dull" in demeanor and presentation. Student response was consistently rated by the observers either "somewhat interested and responsive" or "highly interested and responsive", and only rarely "negative" or "unresponsive", in all sections (Appendix F).

The course evaluation form (Appendix G) called for reactions to instructors and instructional methods. Student reactions corresponded closely to observer ratings.

There was internal consistency in student reports about the conduct of the class. There was no significant difference in reaction between standard and programed sections.

The classroom atmosphere was reported to be friendly by most students (Item 29, Appendix G); the absence of hostility and boredom noted by the observers is also evident in the course evaluation by students (Items 22, 33, Appendix G). Similar patterns of response are shown in programed and standard sections on questions about level of interest, methods of instruction, adjustment to students' level of comprehension, clarity of presentation, and grading practices (Items 17, 18, 24, 26, 31, Appendix G). In effect, a desirable similarity in instructional techniques and in background and temperament of instructors seems to have been achieved. At least, there is as little variation in students' impressionistic reactions to the classes as in observers' reports from section to section, and the variation observed does not seem to be related to the textbook variable.

Student responses to each of the instructors suggest consistent interest and involvement regardless of instructors' personal styles. No significant differences in discussion leadership were reported. Variations in details of content appear to reflect the desired personal involvement of students, and a high degree of student-teacher interaction is reported in all sections (Appendix F).

Summary

It was recognized from the outset that the research procedure presented certain unique problems in controlling the experimental population and the context of instruction within which the textbook variable would be evaluated. It was not possible arbitrarily to select a random sampling, but an adequate sample, representative of course enrollment and University enrollment, was secured. Although it was not possible to provide uniform classroom atmospheres and instructional content, consistency was observed in practices, atmosphere, interpersonal reactions, and type of materials used in the classroom. Variations from one section to another were minimal and reflected the desired accommodation of personal interests and a desired level of personal involvement of students.

PRECEDING PAGE BLANK-NOT FILMED

RESULTS

The first major hypothesis states, "No significant differences in mastery of subject matter, as measured by grades, will be found between students using programed textbooks and students using standard textbooks in a college course." In order to test this hypothesis, nine indices of grades were subjected to analysis of variance: Instructor Index, Examination Index, and Total Index for Term I and Term II separately, and each of these three for Terms I and II combined. F values were obtained for teachers, texts, and interaction.

Table 2 shows that, of the total of 27 F values, 7 were significant at the required level of confidence, p = .05 (See Appendix H for Ss, Ms, df). It would appear that differences in instructor grades for Term II caused the combined Term I-II F value observed for this variable. The same explanation is offered for differences observed in the Total Index. Two of the nine F values for texts are significant. Both occur on the Examination Index, and both favor programed over standard textbook sections. There

TABLE 2

ANALYSIS OF VARIANCE, PROGRAMED/STANDARD SECTIONS GRADE INDICES

Instructor Index

	Section	N	Mean	F	
Term I	08-P	36	8.778	Teacher	3.272
	09-P	36	8.306	Text	0.203
	10-S	37	9.351	Interaction	0.211
	11-S	33	8.091		
Term II	24-P	35	9.800	Teacher	21.721*
	25-P	29	7.207	Text	0.083
	26-S	28	9.500	Interaction	0.106
	23-S	30	7.533		
Combined Terms I-II					
	Programed	136	8.587	Teacher	8.030*
	Standard	128	8.633	Text	0.023
				Interaction	0.411

Examination Index

	Section	N	Mean	F	
Term I	08-P	36	7.417	Teacher	7.288*
	09-P	36	8.333	Text	1.983
	10-S	37	6.541	Interaction	0.061
	11-S	33	8.030		
Term II	24-P	35	7.371	Teacher	0.085
	25-P	29	8.172	Text	5.618**
	26-S	28	6.786	Interaction	0.548
	23-S	30	6.367		

* significant at .01 level ** significant at .05 level

TABLE 2 - (CONTINUED)

Examination Index - (continued)

	Section	N	Mean	F	
Combined Terms I-II					
	Programed	136	7.809	Teacher	2.847**
	Standard	128	7.055	Text	6.887*
				Interaction	0.869

Total Index

	Section	N	Mean	F	
Term I	08-P	36	16.194	Teacher	0.178
	09-P	36	16.639	Text	0.252
	10-S	37	15.892	Interaction	0.002
	11-S	33	16.121		
Term II	24-P	35	17.171	Teacher	5.968*
	25-P	29	15.379	Text	2.203
	26-S	28	16.286	Interaction	-0.107
	23-S	30	13.900		
Combined Terms I-II					
	Programed	136	16.412	Teacher	2.216
	Standard	128	15.670	Text	1.840
				Interaction	0.090

* significant at .01 level   ** significant at .05 level

were no other significant F values for texts.

Five of the nine F values for teachers are significant. These are distributed over both terms and all three indices.

The second hypothesis stated that "No significant differences in impressionistic reactions to a college course will be found between students using programed textbooks and students using standard textbooks." Two sets of impressionistic reactions were obtained. The first was an unstructured report written by each student in his own way. The second was a standard course evaluation questionnaire used in the whole University.

Individual impressionistic reports were read by four independent raters who scored reactions to texts, readings, lectures, and discussions on a five-point rating scale. The resultant ratings were subjected to analysis of variance, in order to determine the significance of differences in reaction between programed and standard textbook groups and the degree of consistency in readers' ratings. Results are shown in Table 3 (See Appendix B for Ss, Ms, and df).

Rater variances showing F values greater than the .05 level of confidence are considered unreliable and presumably

TABLE 3

IMPRESSIONISTIC REACTION RATINGS
PROGRAMED AND STANDARD TEXTBOOK SECTIONS

Assigned Reading	
Texts	0.167
Raters	89.434*
Interaction	6.245*

Lecture Demonstrations	
Texts	0.605
Raters	1.811
Interaction	15.483*

Classroom Discussion	
Texts	106.149*
Raters	140.885*
Interaction	29.506*

Malpass et al	
Texts	49.156*
Raters	1.224
Interaction	0.818

Reprints, Scientific American	
Texts	4.126*
Raters	0.931
Interaction	0.471

Textbook Comparison

(Human Behavior/Analysis of Behavior)	
Texts	4.150*
Raters	0.007
Interaction	1.295

(Human Behavior/Development of H. Behavior)	
Texts	3.566
Raters	5.653*
Interaction	11.687*

* significant at .01 level ** significant at .05 level

invalidate corresponding F values for texts and interaction. Three significant differences are invalidated by this criterion; these appear on ratings of assigned readings (for interaction), classroom discussion (for texts and interaction), and comparison of Human Behavior with Development of Human Behavior (for interaction).

Other findings show a significantly higher rating of Scientific American reprints (used as supplementary readings) by programed sections than by standard textbook sections (p = .05). Students in standard sections who have used both texts rate the programed text, Human Behavior, even higher than do students in programed sections (p = .01). These results are fairly consistent with the analysis of the course evaluation forms, which are much more detailed in content (Appendix G). In both Term I and Term II, students in standard sections reported more frequently than students in programed sections that they had done "all the required reading." However, students in programed sections reported more frequently than those in standard sections that they had done "some or much independent reading " (Item 11, Appendix G . The next several references are to other items in this appendix).

In programed sections, "detailed study of the required reading" was indicated by a distinct majority of students as the method of study most necessary to meet grading requirements of the course. Students in standard sections gave greater weight than those in programed sections to notes, outside readings, and talking with the teacher or fellow students. Even though required reading was still most frequently mentioned as the most important factor by students in standard sections, 49% of these students in Term I and 40% of them in Term II so designated it, as compared with 76% and 68%, respectively, of students in programed sections (See Item 14).

When asked "Which of the following course activities did you find of the greatest value?", students in the four programed sections selected texts and class discussions in that order. Mean ratings are almost identical. Those in standard sections selected class discussions most frequently in Term I (50%), with lectures rated higher than texts and outside reading. In Term II, they rated texts and outside readings first (40%) but still rated lectures first more frequently than did students in programed sections (See Item 36).

Texts assigned for the course were rated "of outstanding value" more frequently in programed sections than in standard sections, although a minority in each group expressed this opinion. Most students in both groups rated them "of value" or "of great value". However, the over-all rating of texts was significantly higher in programed than in standard sections. Analysis of variance was run on this particular item and yielded a variance for texts of F = 7.670 (p = .01), with non-significant F's for teacher and interaction (F = 0.312 and F = 0.419 respectively).

Students in standard textbook sections rated supplementary assigned readings "of great value" or "of outstanding value" more frequently than did students in programed sections, while students in programed sections rated them "of no value" or "of slight value" more frequently than did those in standard sections. Ratings of textbooks by both groups tended to be lower in Term II than they were in Term I (See Item 38).

In individual conferences a few students made some very vociferous complaints to faculty that the programed text required an excessive amount of time in study. Several students voiced this complaint in the impressionistic reaction reports. But a majority of those in both standard and programed sections indicated that the work they did outside of class was "about average for the number of credits received." Altogether eight students in both terms indicated that the amount of work was excessive (See Item 34). Perhaps the complaints were a pious tribute to the good intentions of the students, assuming that their actual performance was accurately described in the course evaluation forms. Several students seem to have put a finger on the problem when they suggested that the programed text made a student feel as if he were working harder since he had to pay attention to every item and couldn't skip or scan the material.

The material in the course was rated "of average difficulty" most frequently in all sections, a clear majority giving this rating in Term II (See Item 42). However, students in standard sections rated the material "somewhat more difficult" more frequently than did those in programed sections. Analysis of variance applied to this item showed standard sections rating course material as more difficult than did programed sections, the variance being $F = 3.083$ ($p = .05$), with teacher and interaction variances of no significance (F = 1.570 and F = 0.080, respectively). Yet there were few direct complaints of difficulty from students in standard sections. Perhaps the fact that students using the programed text were asked to report erroneous, ambiguous, or difficult frames may have invited more rancorous comment than those in standard textbook sections felt like giving.

When asked to choose between Human Behavior and Analysis of Behavior, programed sections overwhelmingly chose Human Behavior, 87% to 13% (See Item 55). There were numerous comments in the impressionistic reaction sheets about the preference for vertical programing. It therefore seems reasonable to regard the forced-choice question, Item 55, as a vote for vertical programing. While almost all students commented on the difficulty of reviewing the programed text, they stated that they found vertical programing not nearly as difficult to review as horizontal programing. Many made acid comments on the waste of time involved in horizontal programing by turning each page of a chapter seven times in order to review all items.

The preference for vertical programing and the difficulties in using horizontal programing may account for the reaction of students in programed sections to the amount of reading required. Although approximately the same number of frames was involved in 25-30 pages of Human Behavior and 65-70 pages of Analysis of Behavior, only 20% rated the former "far too much" or "more than I could reasonably handle," compared with 75% giving these unfavorable ratings to Analysis of Behavior (See Items 53-54). Assignments in the standard texts, ranging from 25 to 55 pages in length, were rated excessive by 31% of students.

When asked to rate texts on a five-point scale, students gave Volume I of Human Behavior top ratings in Term I in a clear majority of instances, 69% rating it "clearly superior" or "very good" in interest and value, compared with 34% for Analysis of Behavior, and 35% for Development of Human Behavior (standard sections). However, Volume II of Human Behavior was rated much lower than Volume I, the top ratings dropping to 30% in Term II. Over both terms the two top ratings were given to the programed text by 44% of students, to the standard text by 35% of students (See Items 51, 52 and 51S).

During Term I in standard textbook sections, students rated supplementary readings higher than the text, giving

Learning: Reinforcement Theory (Keller, 1954) top ratings in 59% of cases, Primer of Freudian Psychology (Hall, 1954) in 65%, and Scientific American reprints in 57% of cases. During Term II, ratings for supplementary material were lower, American Race Relations Today (Raab, 1962) receiving 23% top ratings and Mass Communications (Wright, 1962) 33%. Standard sections gave 57% of their top ratings to reprints, compared with 31% in programed sections. There did not seem to be any marked aversion for the standard textbook; it received first or second rating in 35% of cases. Students in standard sections rated some supplementary readings higher and some lower than their text; in programed sections, by contrast, texts were consistently rated higher than other readings (See Appendix G).

Students were asked to select the most valuable and the least valuable techniques used in the course (Items 61-62). A high degree of correspondence between programed and standard groups in their ratings of "most valuable" techniques is evident from Table 4.

TABLE 4

FREQUENCY OF SELECTION AS MOST VALUABLE OF FIVE TEACHING TECHNIQUES

Technique	Rank Order and Percent of Students Selecting Each Technique			
	Term I		Term II	
	Programed	Standard	Programed	Standard
Lectures	3 (20%)	2 (16%)	3 (8%)	3 (24%)
Demonstrations	4 (7%)	3 (16%)	5 (3%)	5 (4%)
Class Discussions	1 (42%)	1 (55%)	2 (34%)	2 (31%)
Assigned Readings	2 (29%)	4 (11%)	1 (48%)	1 (32%)
Examinations	5 (2%)	5 (2%)	4 (7%)	4 (9%)

Table 5 shows a high degree of differentiation in their "least valuable" rankings.

TABLE 5

FREQUENCY OF SELECTION AS LEAST VALUABLE OF FIVE TEACHING TECHNIQUES

Technique	Rank Order and Percent of Students Selecting Each Technique			
	Term I		Term II	
	Programed	Standard	Programed	Standard
Lectures	3.5 (16%)	1 (32%)	1 (41%)	2 (19%)
Demonstrations	5 (9%)	2 (28%)	3.5 (12%)	5 (10%)
Class Discussions	1 (35%)	4.5 (12%)	2 (28%)	1 (39%)
Assigned Readings	2 (24%)	3 (16%)	3.5 (12%)	4 (15%)
Examinations	3.5 (16%)	4.5 (12%)	5 (7%)	3 (17%)

But the rank order obscures rather than illuminates some significant quantitative differences between programed and standard textbook groups. First, programed sections rated readings *most* valuable more frequently than did standard sections, in both Term I and Term II, the percentages being 29% and 11%, respectively, for Term I and 48% and 32%, respectively, in Term II. The relative ranking of the value of readings improved in both groups between Terms I and II, but the improvement was somewhat greater in standard textbook sections.

Second, *least* valuable ratings of readings remained almost constant in standard sections, 16% in Term I, 15% in Term II. In programed sections, *least* valuable ratings declined in frequency from 24% in Term I to 12% in Term II.

Third, lecture-demonstrations were rated *least* valuable more frequently by standard than by programed sections in Term I. In Term II the relation was reversed, the majority of *least* valuable ratings (53%) going to lectures *and* demonstrations in the programed sections. In standard sections, the percentage of *least* valuable ratings declined from 60% to 29% between Term I and Term II.

Fourth, in standard sections, discussions were rated least valuable (39%) more frequently than most valuable (31%) in Term II. Readings increased in most valuable ratings from 11% to 32% and remained constant in least valuable ratings at 16% and 15% in Term I and Term II, respectively.

In general, the course evaluations seem to reflect a preference for the programed text over the standard text. Higher ratings were given to textbooks in the reactions of programed sections, and their ratings of textbooks are higher than those of standard sections in most instances. Complaints made to the instructors about the difficulty of programed materials are supported by the frequent indications of excessive assignments found in the course evaluation; but there seems to be little significant difference between programed and standard sections in this respect. An important difference appears within programed sections in their preference for a textbook using vertical programing over one using horizontal programing, and in more frequent reports that horizontally programed reading assignments were excessive in length.

Standard sections tend to be less consistent than programed sections in ratings of instructional variables from one term to the next. One interesting feature is the inverse relation between programed and standard sections in rating lecture-demonstrations. As lecture-demonstrations increase in unpopularity in programed sections, their unpopularity decreases in the standard sections. Reactions in both groups to supplementary readings are mixed, but show a tendency for programed sections to rate these slightly higher than do standard sections (perhaps from a sense of relief in getting back to "regular reading").

In summary, then, very few significant differences were found in the achievement of students using programed texts vs. those using standard texts, where achievement was evaluated by instructor grades and common end-of-course exams. Several significant differences were found in students' impressionistic reactions to textbook and other pedagogical variables. In general, the programed textbooks were preferred to the standard texts used in the course.

CONCLUSIONS

Few significant differences in mastery of subject matter, as measured by grades, were found between students using programed textbooks and those using standard textbooks in a college course. Specifically, out of twenty-seven analyses of variance, only seven significant F values were obtained. Of these, only two were related to the textbook variable; both favored programed sections, and both were on the Examination Index. There were also two significant F values for teachers on the same index. The weight of evidence indicates that the first hypothesis (no differences in grades will be found between students using programed and those using standard textbooks) cannot be rejected.

However, differences in means on the Examination Index favor programed textbook over standard text sections in each term and for both terms combined. The F value in Term I is below the .05 level of confidence, but is significant at that level in Term II. When indices for Term I and Term II are combined, the F value is at the .02 level. Among other things, these data suggest the possibility that cumulative experience with programed material may affect performance on examinations.

This possibility is suggested because the Examination Index in the course, Human Behavior, is based upon a multiple-choice final examination. The form in which programed items are presented, and the techniques involved in selecting the correct response to each frame from several plausible alternatives, bear considerable similarity to the form and technique employed in multiple-choice examinations. If there were effects of practice in form and technique, they might be expected to accumulate from one examination period to the next. This is precisely what appears in the present study. The difference on the Examination Index favors programed sections; it appears in Term I and increases in Term II.

These effects are consistent with other reported results of programed instruction. For example, Holland (1963) reported a study of instruction by teaching machines, in a Harvard University course. Quite dramatic reductions in error rates, rapidly approaching zero, were achieved after a very small number of practice sessions. The same direct demonstration cannot be given with programed textbooks, which lack the built-in self-testing feature of teaching machines. However, the successive examination scores of students using programed textbooks suggest that practice with programed material tended to reduce the number of erroneous responses on the final examinations.

Only part of the difference favoring programed sections on the Examination Index can be reasonably attributed to the effect of practice upon error rates. The final examination in the course does not simply measure errors on items included in the program, as do teaching machines. Because of the variation among the several sections in particular topical interests and emphases in the content of class discussion, illustrative material is drawn from related fields, and the examination includes interpretative and analytical questions as well as information from the textbook and common lecture-demonstration. Consequently, a portion of the examination presents novel problems requiring inference from course materials. Any difference in examination scores may thus represent differences in accuracy of inference from unfamiliar material as well as differences in knowledge of course content. It seems reasonable to attribute at least part of the superiority of programed sections on the Examination Index to reduction in error scores as a result of direct practice with the technique of inference required in the use of programed material, as well as to better retention of learned content material.

However, for the variance favoring programed sections on the Examination Index to be regarded as a significant difference in mastery of subject matter attributable to the textbook variable, it should also appear on the other two indices. As a matter of record, the instructors graded almost entirely on the basis of examinations identical in form with the final examination. Consequently, any advantages accruing to students using programed material through reduction of erroneous responses and practice in methods of inference should have appeared on the Instructor Index as well as on the Examination Index, and on the Total Index as the sum of these two variables. However, significant differences on the Instructor Index were not related to the textbook variable.

On the course evaluation form and on impressionistic ratings, there were indications that programed texts demanded more time and greater concentration from students than did the standard textbook used. There are no empirical data to indicate that the students using programed texts actually gave more time and effort to study than did students using standard texts, aside from some verbal reports. Furthermore, any tendency for use of the programed text to reinforce regular daily study habits is probably offset by the weighting of the final examination, counting for half the course grade. This practice would seem likely to reinforce the widespread habit of studying for finals instead of studying throughout the course.

As stated earlier, most differences in grades favoring programed textbook sections over standard textbook sections are not significant. So the first hypothesis of the study cannot be rejected. Findings indicate little significant difference in mastery of subject matter, as measured by grades, between programed and standard textbook sections.

The second null hypothesis can be rejected on the basis of available evidence: There are distinct and significant differences in impressionistic reactions to the course between students using programed textbooks and students using standard textbooks. These differences carry some implications for the selection and use of programed materials in college courses. On the whole, the impressionistic reactions favored programed material. There was also a tendency for students using programed textbooks to rate other kinds of readings higher than did students using standard texts. The positive reactions were surprisingly frequent, and even the negative reactions seem to have a positive side.

First, several direct expressions of preference for programed material were obtained. When asked to rank resources used in the course in order of preference, students using programed texts gave such textbooks a higher ranking than did those students using the several standard texts. Programed texts were also rated higher than supplementary readings, which were in standard textbook or reprint form, by those students using programed material. Among those few students who had used both programed and standard textbooks, either by transferring from one type of section to the other, or by borrowing a programed text out of curiosity, there was a strong preference for programed instruction over the conventional textbooks used. Although they voiced fewer direct complaints, students in standard textbook sections tended to rate course material more difficult than did students enrolled in programed sections.

Second, there is a tendency for students in programed textbook sections to rate the reprints and other supplementary material higher than did students in standard textbook sections. There were a few impressionistic reactions which indicate that some of this response may be a negative reaction to programed material -- an expression of relief in getting back to a familiar form of reading, after being exposed to programed textbook. On the other hand, this may represent an advantage of programed material, in that the contrast in form between programed and standard material may tend to sharpen the interest in and comprehension of both types of presentation.

Third, many students felt that programed material demanded more time and study than they wished to give. The resentment and resistance that they expressed may represent a tolerable price to pay for any advantages from spending more time in study -- or from feeling that they ought to spend more time in doing their course work!

Also, many students in standard sections expressed resentment of an advantage in preparing for multiple-choice examinations that they felt must accrue to students using the programed textbooks. There is some indication in this study that there may in fact be such an advantage. If so, it does not appear to be immediately and fully exploited by students, but appears on the final examination at the end of the year's work. Perhaps this suggested advantage could be more fully exploited by some measures for reducing the initial negative reaction to the apparent demands of programed material upon time and energy.

The preference for vertical over horizontal programing was very strongly expressed. There were many informal individual expressions of strong preference for the vertical form. And on the course evaluation questionnaire, almost nine out of ten students preferred the vertically programed text when asked to choose between it and the horizontally programed text used in Term I. Three out of four students rated assignments in the horizontally programed text excessive, even though the number of frames was commensurate with assignments in the vertically programed text, which only one in five found excessive. The vertical text was generally considered much easier to review.

These findings suggest that vertically programed textbooks might be more acceptable to students than horizontally programed textbooks. Use of the vertical form might reduce some of the negative reactions to programing. From individual comments, this seems particularly likely in a regular course, where the self-testing feature of the program is not compulsory, and review for a later examination is necessary. It might also be profitable to give some instruction to students in the technique of reviewing programed material -- which does not appear to come naturally to many of its readers.

Indeed, the results suggest that the effectiveness of programed texts might well be improved by giving more direct instruction in the techniques of programed study. For instance, the change-of-pace effect in working back and forth between programed and standard material could be consciously used to improve mastery of material. So could the self-testing feature of programed material, which might offset some of the tendency to postpone studying until just before exams. Certainly instruction in techniques of review is indicated. And direct demonstration of the relation between the construction of programed materials and the form and method used in the construction of examinations might help students use examinations more effectively as learning devices as well as help them do better on examinations.

The structure of the course also should be considered in using programed textbooks. Programed material has the virtue -- at least potentially -- of reinforcing good habits of study. It forces attention, it demands an active response, it forces inferences, and presumably requires at least a degree of critical evaluation of responses. It places a premium on regular concentrated periods of study, and provides for immediate self-testing and correction of errors, with immediate reinforcement of correct responses.

But the program alone does not insure these advantages. They must be supported by the total structure of the course itself. The results of this study suggest that conventional methods of instruction may have to be changed in order to take full advantage of programing. For example, in this instance grading practices may reward cramming and encourage poor habits of study by the weighting of the final examination as half the course grade. Use of the programed textbook may further foster this tendency. The conventional pattern of instruction in the course thus may lead to misuse of the programed text, for securing short-run gains rather than solid mastery of the material.

There seems to be some evidence of this effect in the present study, although it differs little from the common complaints of instructors using standard textbooks and conventional methods of instruction. Although the indices are determined by exactly the same type of test, the programed sections show higher scores than standard sections on the Examination Index, but not on the Instructor Index. If the gains from programed instruction were significant and had been fully exploited, these gains should have appeared early and consistently, appearing in the Instructor Index instead of only on the final examination at the end of the term.

If gains in mastery of subject matter are to be achieved, programed texts alone probably will not do the job. The differences in mastery which do appear in the present study suggest that real gains may be possible. But if they are to be made, the course must be organized in such a way as to weight more heavily and reinforce more strongly the habits of regular, consistent study. Instruction in the study of programed material, and in study skills in general, must be made explicit in order to be more effective than they were in this study.

In spite of the foregoing qualifications, impressive gains from the use of programed textbooks are indicated by results of this study. The decided preference for programed material, the favorable reactions to the programed text, and even the feeling that more work was demanded of students using it, offer real advantages from programing.

A word must be said about the teacher variable, which proved significant more frequently than the textbook variable, and on all three indices of performance. It should be no surprise that the teacher is master of the grade, and that the teacher has a greater effect upon the grade than does the textbook.

What is pertinent here is the observation about some research on programing (e.g. Cronbach, 1962) that the effectiveness of the program seems to be related in large part to the attitude of the teacher toward programed instruction. There is no evidence in this study that teacher bias affected the results one way or the other. The attitudes of the teachers were known beforehand to be favorable to programed material. The emphasis in classroom discussion being on novel problems and personal interests of students, rather than on explication of the text, there was little opportunity for any latent bias to operate. Some instructors using these and other programed textbooks have expressed personal opinions favoring programed material, because it seems to reduce the amount of time required in discussing basic concepts, and frees time for discussion of current research and practical applications of theories.

However, the absence of significant interaction variance on the grade indices suggests that the teacher variable and the textbook variable are not necessarily interrelated. In producing the Total Index from the sum of Instructor and Examination Indices, the advantage of standard textbook sections on the former and of programed textbook sections on the latter cancel each other out. There is no indication in any of the results that any teacher gave significantly higher grades to one or the other type of section.

In sum, the study finds few significant differences in mastery of subject matter related to programed or standard textbooks. The slight advantage in performance on multiple-choice exams appearing for programed sections may be attributable to practice in the form and method of inference as much as to real differences in mastery.

But this slight advantage, as well as genuine advantages in preferences, resistances, and criticisms, seems to favor the programed texts over the standard textbooks used in this course. Differences in impressionistic reactions tended to favor programed texts: programed textbooks were rated higher in terms of preference and lower in terms of difficulty, especially in vertically programed material; there was also an indication that the programed text demands something closely approaching adequate time in study.

Findings indicate that student performance alone cannot be the criterion for determining whether or not to use a programed textbook. Other factors, including preference or resistance from students and teachers, as well as economy in time and money seem to be more important than the minor differences observed in performance. These factors afford advantages which might be exploited more fully with careful planning and better adaptation of patterns of instruction to the use of programed textbook material.

APPENDIX A

CB 103 HUMAN BEHAVIOR COURSE OUTLINE

The major purpose of this course is to provide information about human behavior, obtained essentially from the behavioral sciences, so you can use it in meaningful ways. Upon completion of the semester's assignments, you should have a fairly thorough understanding of principles which help to explain how behavior is learned, and how it is influenced by genetic, physiological and developmental processes. Concepts about personality from psychoanalysis and self-psychology will be presented and philosophical issues about the nature of behavior will be examined. It is hoped that you will learn to evaluate critically the explanatory constructs used to describe human behavior.

New approaches will be used in the required readings. Both textbooks have been written as programed instruction. Comments about this method can be found in the introductions to the books. The textbooks are:[1]

Human Behavior: A Programed Textbook, by
Malpass, Martin, Givens & Hocutt

The Analysis of Behavior, by Holland & Skinner

In addition to textbook reading assignments, the outline directs you to some supplementary readings available in the Reserve Room of the library.

---

[1] The textbooks listed are for programed sections. The same instructions and outline were followed by standard sections but the textbooks were:

The Development of Human Behavior, by Dewey & Humber
Learning: Reinforcement Theory, by Keller (paperback)
A Primer of Freudian Psychology, by Hall

Detailed description of topics and reading assignments are omitted from this outline, in order to save space.

APPENDIX A - (CONTINUED)

Lecture-demonstrations will be given each week to combined sections, followed by discussion periods in individual class sections. Your class instructor may ask you to complete additional projects or readings in addition to those given in the outline. Periodic evaluations of your knowledge and understanding of assigned materials will be made.

The course outline indicates weekly topics and readings. Reading assignments should be completed before the lecture-demonstration each week.

APPENDIX A - (CONTINUED)

OUTLINE

Week	Topic	Readings	
		Programed	Standard
Sept. 10	Biological bases of behavior I: Hereditary influences	Human Behavior, Chap. 1 Sci.Am.Reprints, Crick, F.H.R. (1954) The structure of hereditary material	Dewey & Humber, Chap. 3 Crick reprint
Sept. 17	Biological bases of behavior II: The brain, nervous system and endocrine glands	Human Behavior, Chap. 2 Sci.Am.Reprints, Gray, W. (Oct.1948) The great ravelled knot Funkenstein, D.H. (May 1955) The physiology of fear & anger	Dewey & Humber, Chap. 4 Gray reprint
Sept. 24	Learning I: Respondent and operant conditioning	Analysis of Behavior, Parts I, II (pages 1-71)	Keller, pp. 1-7 Skinner, Science of Behavior, Chaps. 4,5 or Lundin, Personality, Chap. 3 Dewey & Humber, Chap. 6, 126-135
Oct. 1	Learning II: Shaping behavior and reinforcement schedules	Analysis of Behavior, Parts III-V (pp. 72-136)	Keller, pp. 7-15 Skinner, Chap. 6 or Lundin, Chap. 4

APPENDIX A - (CONTINUED)

Week	Topic	Readings	
		Programed	Standard
Oct. 8	Learning III: Discrimination, generalization and the effects of deprivation	Analysis of Behavior, Parts VI-VIII (pages 137-207)	Keller, pp. 15-36 Skinner, Chap. 7 or Lundin, Chap. 5
Oct. 15	Emotional behavior	Analysis of Behavior, Parts VIII-IX (pages 208-271)	Dewey & Humber, Chap. 7 Skinner, Chaps. 9, 10 or Lundin, Chaps. 9, 10, 11
Oct. 22	Developmental aspects of behavior I: Prenatal factors, birth and infancy	Human Behavior, Chap. 3 Sci.Am.Reprints, J. Levine (1960) Stimulation in infancy	Dewey & Humber, Chap. 9 Levine reprint
Oct. 29	Developmental aspects of behavior II: Childhood	Human Behavior, Chap. 4	Dewey & Humber, Chap. 10
Nov. 5	Developmental aspects of behavior III: Adolescence and early adulthood	Human Behavior, Chap. 5 Reprints in Sociology, Davis, K. Sociology of parent-youth conflicts	Dewey & Humber, Chaps. 11, 12 Davis reprint

APPENDIX A - (CONTINUED)

		Readings	
Week	Topic	Programed	Standard
Nov. 12	Personality I: Psychoanalytic concepts	Human Behavior, Chap. 6 Sci.Am.Reprints, Bettelheim B. (March 1959) Joey: A "mechanical boy"	Hall (entire book) Bettelheim reprint
Nov. 19	Personality II: Neo-Freudian concepts	Human Behavior, Chap. 7	A brochure of readings will be provided by the instructor
Nov. 26	Personality III: Self-psychology	Human Behavior, Chap. 8 Sci.Am.Reprints (1)Wittreich, W.J. (April 1959) Visual perception & personality (2)Rogers, C.R. (1952) Client-centered psychotherapy	Dewey & Humber, Chap. 8 Wittreich reprint Rogers reprint Brochure provided
Dec. 3	Personality IV: Behavioristic interpretations of personality	Analysis of Behavior Parts XIII-XV (pp.298-332)	Dewey & Humber, Chap. 8 Skinner, Chaps. 10,11,12 or Lundin, Chaps. 15,16,18
Dec. 10	Philosophical considerations of the nature of man	Human Behavior, Chap. 9	Titus, Living Issues in Philosophy, Chaps. 10,11, 12

APPENDIX A - (CONTINUED)

CB 104 HUMAN BEHAVIOR
COURSE OUTLINE

This course is a continuation of CB 103. Concepts of behavior discussed in the first trimester will be applicable to material in this course, although many new concepts will be introduced. This trimester, greater emphasis will be placed on social behavior - its sources in culture, society and social institutions - and on social issues and problems. Analysis of anthropological, sociological and philosophical data and concepts will permit a wider understanding of social phenomena which help to shape human behavior.

The major text is the second volume of the programed textbook used in the first trimester. Two paperbacks are also required. Primary sources for the required reading are:[2]

Human Behavior: A Programed Textbook (Volume II)
Fuson, Edmond, Allen, Lantz & Hocutt (Ed. Malpass)

Mass Communication, by Charles R. Wright

American Race Relations Today, by Earl Raab

---

[2] The textbooks listed are for programed sections. The same instructions and outline were followed by standard sections but the textbooks were:

The Development of Human Behavior, by Dewey & Humber
The Evolution of Culture, by L. White
Mass Communications, by C. Wright

In addition, the following were recommended but not required:

Class & Society, by Mayer
Marriage and the Family, by Lee & Lee
Living Issues in Philosophy, by Titus

APPENDIX A - (CONTINUED)

OUTLINE

Week	Topic	Readings	
		Programed	Standard
Jan. 7	Culture & Society I	Human Behavior, Chap. 10	Dewey & Humber, Chap. 5 White, Chap. 2
Jan. 14	Culture & Society II	Human Behavior, Chap. 11	White, Chaps. 3, 5
Jan. 21	Learning in a Social Context	Human Behavior, Chap. 12	Dewey & Humber, Chap. 6 (pp. 120-147) Dewey & Humber, Chap.14
Jan. 28	Social Stratification I	Human Behavior, Chap. 13	Mayer, pp. 1-8; 22-42
Feb. 4	Social Stratification II	Human Behavior, Chap. 14	Mayer, pp. 43-79
Feb. 11	Social Institutions I: The Family	Human Behavior, Chap. 15	Lee & Lee, pp. 3-53
Feb. 18	Social Institutions II: The Family, continued	Human Behavior, Chap. 16	Lee & Lee, pp. 81-113, 317-338
Feb. 25	Social Institutions III: The School	Human Behavior, Chap. 17	Dewey & Humber, Chap.21
March 4	Social Institutions IV: Mass Communications	Mass Communication, by Wright	same

APPENDIX A - (CONTINUED)

Week	Topic	Readings	
		Programed	Standard
March 11	Social Problems I: Prejudice and Minority Group Problems	Amer. Race Relations Today (Raab) pp. 29-68, 79-124	Dewey & Humber, Chaps. 15, 17
March 18	Social Problems II: Mental Health & Mental Illness	Human Behavior, Chap. 18	Dewey & Humber, Chaps. 18, 20
March 25	Ethics and Human Behavior I	Human Behavior, Chap. 19	Titus, Chaps. 22, 24
April 1	Ethics and Human Behavior II	Human Behavior, Chap. 20	Titus, Chaps. 14, 15
April 8	Summary and Overview		

APPENDIX B

COMPARISONS OF EXPERIMENTAL SECTIONS WITH UNIVERSITY ENROLLMENT AND WITH ENROLLMENT IN HUMAN BEHAVIOR, 1962-1963

Sex	**Males**	**Females**	x^2	**df = 1**
Experimental sections	159	114	0.156	p = .70
University enrollment	1934	1457		

Residence	**Commuter**	**Resident**	x^2	**df = 1**
Experimental sections	209	64	0.198	p = .70
University enrollment	2643	748		

Cumulative Grade Point Ratio		**Mean = 2.143**		
	Below	**Above**	x^2	**df = 1**
Experimental sections	137	120	0.119	p = .70
CB 103-104 enrollment[1]	400	333		

CB 103 Course Grades		**Mean = 2.150**		
	Below	**Above**	x^2	**df = 1**
Experimental sections	51	92	1.333	p = .20
CB 103-104 enrollment	311	703		

---

[1] Some transfer students had no USF grades; hence only 990 of 1157 in the course appear in this table.

APPENDIX C

BARTLETT'S TEST OF HOMOGENEITY
(MEAN SCORES, VARIANCES, AND B VALUES)
FLORIDA TWELFTH GRADE TESTS[1]

Experimental Sections, Human Behavior, Term I and Term II
1962-1963

Term I

Test	Section	N	Mean	Variance	df = 3
Psychological	08-P	32	68.500	476.065	B = 4.642
	09-P	33	78.606	218.371	p = .20
	10-S	34	71.500	359.288	
	11-S	29	75.185	436.926	
English	08-P	32	72.875	285.532	B = 1.354
	09-P	33	80.818	217.278	p = .70
	10-S	34	74.294	305.547	
	11-S	27	72.630	407.396	
Social Studies	08-P	32	71.969	371.322	B = 1.501
	09-P	33	79.697	224.780	p = .70
	10-S	34	70.382	319.819	
	11-S	27	78.519	302.336	
Natural Science	08-P	32	76.031	290.741	B = 3.796
	09-P	33	78.515	256.070	p = .30
	10-S	34	72.912	559.962	
	11-S	29	71.185	336.926	
Mathematics	08-P	32	71.000	336.129	B = 3.759
	09-P	33	74.727	322.080	p = .30
	10-S	34	74.559	412.436	
	11-S	27	71.444	368.179	

---

[1] The five tests are: ACE Psychological Examination for High School Students; Cooperative English Test, Form B1, Lower Level; Cooperative Social Science Test, Form Z; Cooperative Natural Science Test, Form Z; Cooperative Mathematics Test, Form Z.

APPENDIX C - (CONTINUED)

Term II

Test	Section	N	Mean	Variance	df = 3
Psychological	23-S	24	72.333	321.536	B = -0.425
	24-P	31	72.387	395.445	p = .90
	25-P	22	73.091	320.468	
	26-S	24	75.583	393.819	
English	23-S	24	73.167	282.232	B = 1.309
	24-P	31	77.129	327.783	p = .80
	25-P	22	73.591	404.920	
	26-S	24	79.125	296.114	
Social Studies	23-S	24	77.833	288.406	B = 5.879
	24-P	31	78.581	187.318	p = .20
	25-P	22	78.364	360.242	
	26-S	24	76.750	215.413	
Natural Science	23-S	24	70.750	507.848	B = 13.508
	24-P	31	78.871	159.649	p = .01
	25-P	22	80.909	176.563	
	26-S	24	79.583	201.297	
Mathematics	23-S	24	69.958	485.607	B = 13.856
	24-P	32	76.097	285.424	p = .01
	25-P	22	73.045	566.331	
	26-S	24	78.917	151.732	

Note: Bartlett's Test of Homogeneity compares variances among groups, and is based on the logarithm of the variance. A significant result (B value) can be interpreted according to levels of significance for Chi square, and indicates significant lack of homogeneity. In this study, a significant B value was regarded as suggesting some bias in the sample. Analysis of variance was then used to determine whether the difference was related to the textbook variable. If not, it was regarded as an acceptable difference among sections.

APPENDIX D

BARTLETT'S TEST OF HOMOGENEITY
(MEAN SCORES, VARIANCES, AND B VALUES)
UNIVERSITY OF SOUTH FLORIDA ENTRANCE TESTS

Experimental Sections, Human Behavior, Term I and Term II
1962-1963

Term I

Test	Section	N	Mean	Variance	df = 3
College Qualification Test-Verbal	08-P	33	45.382	162.304	B = 1.423
	09-P	34	51.824	165.241	p = .70
	10-S	37	47.811	249.047	
	11-S	33	52.242	232.939	
College Qualification Test-Numerical	08-P	34	27.206	105.199	B = 0.144
	09-P	34	29.824	107.301	p = .99
	10-S	37	30.919	121.354	
	11-S	33	27.333	113.979	
Cooperative English	08-P	34	47.382	119.940	B = 2.040
	09-P	34	52.118	111.319	p = .50
	10-S	37	50.243	201.411	
	11-S	33	50.758	138.252	
MSU Reading	08-P	34	53.382	790.305	B = 0.034
	09-P	33	58.697	867.999	p = .90
	10-S	36	53.250	994.350	
	11-S	34	62.176	791.227	
Diagnostic Reading	08-P	32	53.160	510.165	B = 0.682
	09-P	32	63.500	540.438	p = .50
	10-S	37	44.920	879.469	
	11-S	34	35.150	1184.658	

APPENDIX D - (CONTINUED)

Term II

Test	Section	N	Mean	Variance	df = 3
College Qualification Test-Verbal	23-S	30	53.400	123.352	B = 5.668
	24-P	34	50.471	93.772	p = .20
	25-P	27	52.963	166.806	
	26-S	27	52.370	164.242	
College Qualification Test-Numerical	23-S	30	28.300	76.424	B = 1.478
	24-P	34	30.176	119.968	p = .70
	25-P	27	30.185	118.618	
	26-S	27	32.148	94.900	
Cooperative English	23-S	29	49.172	107.433	B = 1.660
	24-P	34	49.059	119.815	p = .70
	25-P	27	49.148	140.439	
	26-S	27	53.519	147.336	
MSU Reading	23-S	29	28.655	26.948	B = 0.048
	24-P	34	28.559	24.981	p = .99
	25-P	27	30.852	19.823	
	26-S	27	29.000	19.769	
Diagnostic Reading	23-S	29	64.621	495.744	B = 0.384
	24-P	34	67.882	633.683	p = .95
	25-P	27	73.148	519.823	
	26-S	27	72.333	536.077	

(See Note, Appendix C)

APPENDIX E

FIGURE 1
IMPRESSIONISTIC REACTIONS

		Number & Percentage in Each Category[1]									
	Total No.	1		2		3		4		5	
	Ratings	No.	%	No.	%	No.	%	No.	%	No.	%
Instructional Method											
Assigned Readings (General)											
Programed	465	96	21%	78	17%	12	3%	17	3%	262	56%
Standard	476	65	14%	147	31%	19	4%	39	8%	206	43%
Lecture Demonstrations											
Programed	508	137	27%	83	16%	10	2%	82	16%	196	39%
Standard	601	214	36%	137	23%	8	1%	72	12%	170	28%
Class Discussions											
Programed	502	197	39%	98	20%	11	2%	92	18%	104	21%
Standard	755	334	44%	139	18%	5	1%	109	15%	168	22%

---

[1] Ratings 1-5 represent high-to-low ratings.

APPENDIX E - (CONTINUED)

FIGURE 1 - (CONTINUED)

	Total No. Ratings	Number & Percentage in Bach Category									
		1		2		3		4		5	
		No.	%	No.	%	No.	%	No.	%	No.	%
Textbooks											
Human Behavior											
Programed	290	92	32%	85	29%	11	4%	35	12%	67	23%
Standard	36	13	36%	12	33%	0	0%	7	20%	4	11%
Dev. of Human Behavior											
Programed	4	1	25%	0	0%	2	50%	1	25%	0	0%
Standard	262	21	8%	91	35%	19	7%	69	26%	62	24%
Analysis of Behavior											
Programed	106	4	4%	11	10%	9	9%	30	28%	52	49%
Standard	2	0	0%	0	0%	0	0%	1	50%	1	50%
Primer of Freudian Psychology											
Programed	2	0	0%	0	0%	2	100%	0	0%	0	0%
Standard	89	15	17%	44	49%	22	25%	3	3%	5	6%

APPENDIX E - (CONTINUED)

FIGURE 1 - (CONTINUED)

	Total No. Ratings	Number & Percentage in Each Category									
		1		2		3		4		5	
		No.	%	No.	%	No.	%	No.	%	No.	%
Textbooks (continued)											
Learning: Reinforcement Theory											
Programed	2	0	0%	0	0%	2	100%	0	0%	0	0%
Standard	46	3	7%	25	54%	11	24%	3	7%	4	8%
American Race Relations Today											
Programed	7	0	0%	5	71%	0	0%	2	29%	0	0%
Standard	0	0	0%	0	0%	0	0%	0	0%	0	0%
Evolution of Culture											
Programed	3	1	33%	2	67%	0	0%	0	0%	0	0%
Standard	42	5	12%	21	50%	1	2%	7	17%	8	19%
Mass Communication											
Programed	11	1	9%	5	46%	0	0%	3	27%	2	18%
Standard	42	7	17%	21	50%	1	2%	6	14%	7	17%

APPENDIX E - (CONTINUED)

FIGURE 1 - (CONTINUED)

	Total No. Ratings	Number & Percentage in Each Category 1 No.	%	2 No.	%	3 No.	%	4 No.	%	5 No.	%
Outside Reading											
Sci. of Behavior											
Programed	0	0	0%	0	0%	0	0%	0	0%	0	0%
Standard	104	8	8%	40	38%	14	13%	19	18%	23	23%
Personality (Lundin)											
Programed	2	0	0%	0	0%	2	100%	0	0%	0	0%
Standard	81	4	5%	37	46%	19	23%	15	19%	6	7%
Class & Society											
Programed	2	1	50%	1	50%	0	0%	0	0%	0	0%
Standard	31	5	16%	15	49%	1	3%	5	16%	5	16%
Living Issues											
Programed	2	1	50%	1	50%	0	0%	0	0%	0	0%
Standard	34	4	12%	19	55%	0	0%	6	18%	5	15%

APPENDIX E - (CONTINUED)

FIGURE 1 - (CONTINUED)

	Total No. Ratings	Number & Percentage in Each Category									
		1		2		3		4		5	
		No.	%	No.	%	No.	%	No.	%	No.	%
Outside Reading (continued)											
Marriage & the Family											
Programed	2	1	50%	1	50%	0	0%	0	0%	0	0%
Standard	27	2	7%	13	48%	1	4%	5	19%	6	22%
Scientific Am. Reprints											
Programed	87	21	24%	28	32%	7	8%	14	16%	17	20%
Standard	155	33	21%	68	44%	11	7%	23	15%	20	13%
Joey, a "mechanical boy" (Reprinted fr. *Sci. Am*. March, 1959)[1]											
Programed	2	2	100%	0	0%	0	0%	0	0%	0	0%
Standard	6	6	100%	0	0%	0	0%	0	0%	0	0%

---

[1] One of above reprints singled out by most students.

APPENDIX E

FIGURE 2

ANALYSIS OF VARIANCE, IMPRESSIONISTIC REACTIONS TO SELECTED COURSE VARIABLES[1]

Source	df	Ss	Ms	F
Assigned Readings				
Between textbooks	1	1.164	1.164	0.167
Between raters	3	1873.281	624.427	89.434*
Interaction	3	130.812	43.604	6.245*
Within	256	1787.274	6.982	
Total	263	3792.531		
Lecture Demonstrations				
Between textbooks	1	9.294	9.294	0.605
Between raters	3	83.451	27.817	1.811
Interaction	3	713.453	237.818	15.483*
Within	256	3932.051	15.360	
Total	263	4738.249		
Class Discussions				
Between textbooks	1	434.150	434.150	-106.149*
Between raters	3	1728.654	576.218	-140.885*
Interaction	3	362.042	120.681	- 29.506*
Within	256	-1047.142	-4.090	
Total	263	1477.704		
Reprints, Sci. American				
Between textbooks	1	30.133	30.133	4.126**
Between raters	3	20.397	6.799	0.931
Interaction	3	10.320	3.440	0.471
Within	256	1869.899	7.304	
Total	263	1930.749		

* significant at .01 level ** significant at .05 level

---

[1] Terms I and II combined

APPENDIX E - (CONTINUED)

FIGURE 2 - (CONTINUED)

Source	df	Ss	Ms	F
Human Behavior vs. Analysis of Behavior				
Between textbooks	1	47.945	47.945	4.150**
Between raters	3	2.295	0.765	0.007
Interaction	3	44.873	14.958	1.295
Within	256	2957.378	11.552	
Total	263	3052.491		
Human Behavior: Programed vs. Standard sections				
Between textbooks	1	322.663	322.663	49.156*
Between raters	3	24.100	8.033	1.224
Interaction	3	16.115	5.372	0.818
Within	256	1680.409	6.564	
Total	263	2043.287		
Human Behavior vs. Development of Behavior				
Between textbooks	1	42.575	42.575	3.566**
Between raters	3	-202.444	67.481	5.653**
Interaction	3	418.550	139.517	11.687*
Within	256	3056.159	11.938	
Total	263	3314.840		

* significant at .01 level ** significant at.05 level

APPENDIX F

OBSERVER RATING REPORTS ON SIMILARITY OF LEARNING CONDITIONS

First Week

Classroom Variables	Sec. 24-P Observer			Sec. 25-P Observer			Sec. 26-S Observer			Sec. 23-S Observer		
	1	2	3	1	2	3	1	2	3	1	2	3
I. Similarity of Content												
A. Topic assigned: Social Problems & Mental Health (following among items discussed)												
1. Mental illness	x	x	x	x	x	x					x	
2. Effect of mass media on mental health (propaganda)							x	x	x	x	x	x
B. Student references to text or lecture (number of references)												
1. Malpass et al (P)				1	1							
2. Dewey & Humber (S)										1		2
3. Mass Media (P & S)										2		
4. Lecture				1						1		1
II. Emotional Climate of Class												
A. Instructor is (% of time)												
1. Warm & accepting in gen'l demeanor	75	85	95	10	40	10	90	60	95	25	75	85
2. Impersonal in gen'l demeanor	25	15	3	90	50	80		30	5	75	25	14
3. Critical, sarcastic or hostile in gen'l demeanor[1]			2			10	10	10				1

---

[1] Instructors used mock hostility in role-playing

APPENDIX F - (CONTINUED)

First Week - (cont'd)

Classroom Variables	Sec. 24-P Observer			Sec. 25-P Observer			Sec. 26-S Observer			Sec. 23-S Observer		
	1	2	3	1	2	3	1	2	3	1	2	3
B. Instructor is (% of time)												
1. Dull & pedantic in presentation						10						5
2. Effective but not animated in presentation	50	20	10	90	60	85		10		75	40	90
3. Spirited & stimulating in presentation	50	70	90	10	15	5	100	60	100	25	25	5
C. Most students (75% of class or better) are: (% of time)												
1. Somewhat interested & responsive (attend to class work without appearing either bored or enthusiastic)	50	35	15	75	60	58	50	65	25	75	60	25
2. Negativistic and/or hostile (snide looks, laughs, etc.)						2						
3. Unresponsive (apathetic, bored; give very short answers to questions, etc.)					10	40			5			60
4. Highly interested & responsive (nod enthusiastically, participate eagerly, etc.)	50	60	85	25	20		50	35	70	25	40	15

APPENDIX F - (CONTINUED)

First Week - (cont'd)

Classroom Variables	Sec. 24-P Observer			Sec. 25-P Observer			Sec. 26-S Observer			Sec. 23-S Observer		
	1	2	3	1	2	3	1	2	3	1	2	3
III. Class procedure[2]												
A. Organization of class time is:												
1. Rambling but interesting			x					x		x	x	
2. Rambling and uninteresting												x
3. Well-organized and interesting	x	x		x	x	x	x		x	x		
4. Well-organized but uninteresting				x								
B. Discussion encouraged & guided												
1. Instructor lectures entire period												
2. Instructor lectures most of period						x						
3. Entire period spent in questions & answers			x									
4. Most of period spent in questions & answers	x	x			x			x	x	x	x	x
5. Time almost equally divided between lecture & class discussion				x								
6. Some other procedure												
(a) Student reports							x			x		
(b) Buzz session							x		x			
(c) Unsigned, undocumented newspaper used in class							x	x	x			
(d) Letter read in class											x	x

[2] Dual ratings represent 50% class time rated in each category

APPENDIX F - (CONTINUED)

First Week - (cont'd)

Classroom Variables	Sec. 24-P Observer 1	2	3	Sec. 25-P Observer 1	2	3	Sec. 26-S Observer 1	2	3	Sec. 23-S Observer 1	2	3
IV. Comment on anything that might have an effect on student performance												
A. Introduction of observers	x	x	x	x	x	x	x	x	x	x	x	x
B. Class small because many students absent						x						
C. USF showcase (many visitors to class	x	x					x					
D. Good-natured instructor									x			x

(Note: Not all raters gave percentage ratings adding up to 100%)

APPENDIX F - (CONTINUED)

Classroom Variables	Second Week Sec. 24-P Observer 1	2	3	Sec. 25-P Observer 1	2	3	Sec. 26-S Observer 1	2	3	Sec. 23-S Observer 1	2	3
I. Similarity of Content												
A. Topic assigned: Ethics and Human Behavior (following among items discussed)												
1. Basis of determination of right and wrong	x	x	x	x		x	x		x			
2. Crime and justice	x		x				x	x				
3. Logic	x		x									
4. Values		x	x	x		x				x		x
5. Relativism	x								x	x		x
B. Student references to text (number of references)												
1. Malpass et al (P)				1		1						
2. Dewey & Humber (S)												
3. Titus, Living Issues in Philosophy												1
II. Emotional Climate of Class												
A. Instructor is (% of time)												
1. Warm & accepting in gen'l demeanor	50	60	100	10			70	80	100	25		75
2. Impersonal in general demeanor	50	20		90		100	20	10		75		25
3. Critical, sarcastic or hostile[1] in gen'l demeanor							10					

APPENDIX F - (CONTINUED)

Second Week - (continued)

Classroom Variables	Sec. 24-P Observer 1	2	3	Sec. 25-P Observer 1	2	3	Sec. 26-S Observer 1	2	3	Sec. 23-S Observer 1	2	3
B. Instructor is (% of time)												
1. Dull & pedantic in presentation												
2. Effective but not animated in presentation	50	40	10	100		75	50	60	75	100		75
3. Spirited & stimulating in presentation	50	40	90			25	50	20	25			25
C. Most students (75% of class or better) are: (% of time)												
1. Somewhat interested & responsive	90	40	85	100		90	85	10	70	90		55
2. Negativistic and/or hostile												
3. Unresponsive		5	5					5	15			
4. Highly interested & responsive	10	30	10			10	15	30	15	10		45
III. Class Procedure[2]												
A. Organization of class time is:												
1. Rambling but interesting	x	x		x			x	x				
2. Rambling and uninteresting							x					
3. Well-organized and interesting		x	x			x			x	x		x
4. Well-organized but uninteresting												

APPENDIX F - (CONTINUED)

Second Week - (cont'd)

Classroom Variables	Sec. 24-P Observer 1	Sec. 24-P Observer 2	Sec. 24-P Observer 3	Sec. 25-P Observer 1	Sec. 25-P Observer 2	Sec. 25-P Observer 3	Sec. 26-S Observer 1	Sec. 26-S Observer 2	Sec. 26-S Observer 3	Sec. 23-S Observer 1	Sec. 23-S Observer 2	Sec. 23-S Observer 3
B. Discussion encouraged and guided												
1. Instructor lectures the entire period												
2. Instructor lectures most of period		x					x	x				
3. Entire period spent in questions & answers	x		x			x			x			x
4. Most of period spent in questions & answers				x			x			x		
5. Time almost equally divided between lecture & class discussion												
6. Some other procedure												

APPENDIX F - (CONTINUED)

Third Week

(Note: Students in all four sections met together the third week for a student report and lecture by outside speaker.)

I. Content
  A. Topic assigned: Ethics and Human Behavior
    Student report and lecture on prison problems
  B. Student references to text - none

II. Emotional Climate of Class
  A. Visiting speakers were rated warm and accepting in general demeanor 100% of time.
  B. Visiting speakers were rated spirited and stimulating in presentation 90% of time.
  C. Most students were rated as somewhat interested and responsive 100% of time.

APPENDIX G

FREQUENCY AND PERCENTAGE DISTRIBUTION COURSE EVALUATION, TERMS I AND II

Question	Term I				Term II			
	P		S		P		S	
	No.	%	No.	%	No.	%	No.	%
9. In this course I have								
1. done an average level of work	25	35%	21	36%	28	49%	22	39%
2. consistently done the best work of which I was capable	9	13%	9	15%	4	7%	11	20%
3. rarely done the quality work of which I am capable	7	10%	5	8%	5	9%	7	12%
4. not really exerted myself	13	19%	3	5%	12	21%	10	18%
5. done good work most of the time	16	23%	21	36%	8	14%	6	11%
10. All things considered, my achievement in this course has been chiefly determined								
1. chiefly through the efforts of the instructor	3	4%	7	12%	3	5%	1	2%
2. chiefly through my own efforts	17	24%	6	10%	30	54%	26	50%
3. mostly by my own efforts but with encouragement from the instructor	24	34%	17	30%	12	21%	14	27%
4. by my own and the instructor's efforts in about equal proportion	22	31%	18	31%	10	18%	10	19%
5. mostly through the instructor's efforts although I must assume some responsibility	5	7%	10	17%	1	2%	1	2%

APPENDIX G - (CONTINUED)

Question	Term I P No.	Term I P %	Term I S No.	Term I S %	Term II P No.	Term II P %	Term II S No.	Term II S %
11. With respect to reading in this course I have done								
1. all required and much independent reading	3	4%	5	9%	0	0%	2	4%
2. all required and some independent reading	26	39%	15	26%	20	36%	16	29%
3. all required and no independent reading	14	21%	23	39%	9	16%	14	25%
4. some required and much independent reading	1	2%	0	0%	3	5%	3	5%
5. some required and some independent reading	11	16%	7	12%	11	20%	5	9%
6. some required and no independent reading	12	18%	8	14%	12	21%	12	22%
7. no required and much independent reading	0	0%	0	0%	0	0%	1	2%
8. no required and some independent reading	0	0%	0	0%	0	0%	0	0%
9. no required and no independent reading	0	0%	0	0%	1	2%	2	4%
12. I have been absent from this class this term								
1. less than 3 hours	56	80%	50	87%	22	39%	33	59%
2. from 3-6 hours	12	18%	6	10%	27	48%	14	25%
3. 7-10 hours	1	1%	2	3%	4	7%	5	9%
4. 11-15 hours	1	1%	0	0%	1	2%	1	2%
5. more than 15 hours	0	0%	0	0%	2	4%	3	5%

APPENDIX G - (CONTINUED)

Question	Term I				Term II			
	P		S		P		S	
	No.	%	No.	%	No.	%	No.	%
13. I have been absent from the large lecture sections for this course this trimester								
1. less than 3 times	55	78%	51	87%	32	57%	37	65%
2. 3-4 times	4	6%	5	9%	9	16%	7	12%
3. 5-6 times	10	14%	1	2%	5	9%	5	9%
4. 7-8 times	1	1%	0	0%	2	4%	0	0%
5. more than 8 times	1	1%	1	2%	8	14%	6	11%
6. there are no large lectures for this course	0	0%	0	0%	0	0%	2	3%
14. Which of the following methods of study did you find most necessary to meet the grading requirements of this course?								
1. detailed study of the required reading	55	76%	29	49%	40	68%	21	40%
2. taking detailed notes and reviewing them	13	18%	26	44%	5	8%	15	28%
3. concentrating on outside readings	0	0%	2	3%	1	2%	8	15%
4. doing thoroughly the required laboratory work	3	4%	1	2%	0	0%	1	2%
5. talking with the teacher or fellow students	1	2%	1	2%	13	22%	8	15%
17. When the instructor lectures what is your opinion of the way he presents material?								
1. rambling but interesting	28	40%	11	19%	22	39%	24	43%
2. rambling and uninteresting	2	3%	1	2%	11	20%	21	38%
3. well organized and interesting	32	46%	45	76%	19	34%	8	14%
4. well organized but uninteresting	8	11%	2	3%	4	7%	3	5%

APPENDIX G - (CONTINUED)

Question	Term I				Term II			
	P		S		P		S	
	No.	%	No.	%	No.	%	No.	%
18. How interesting does he make the material?								
1. I thought the course would be a bore and it is	0	0%	1	2%	2	4%	5	9%
2. about as interesting as I expected	19	27%	5	9%	21	37%	16	29%
3. much more interesting than I expected	27	39%	28	51%	7	12%	8	14%
4. less interesting than I expected	8	11%	5	9%	16	28%	21	37%
5. somewhat more interesting than I expected	16	23%	16	29%	11	19%	6	11%
19. Do you feel that you are able to get personal help in this course if you need it?								
1. can get a small amount of help	1	1%	4	7%	7	12%	13	24%
2. can get a great deal of personal help from the instructor	28	40%	22	37%	20	36%	11	20%
3. can get no personal help from the instructor	3	4%	0	0%	2	4%	9	16%
4. can get quite a bit of personal help	17	24%	21	36%	12	21%	12	22%
5. can get a moderate amount of help	22	31%	12	20%	15	27%	10	18%
20. How would you rate your instructor in general (all-round) teaching ability?								
1. less than adequate	0	0%	2	3%	7	12%	8	14%
2. outstanding	25	41%	35	59%	15	26%	10	18%
3. poor	9	15%	9	15%	2	3%	9	16%
4. very good	22	36%	11	18%	22	38%	14	25%
5. adequate	5	8%	3	5%	12	21%	15	27%

APPENDIX G - (CONTINUED)

Question	Term I				Term II			
	P		S		P		S	
	No.	%	No.	%	No.	%	No.	%
21. How frequently does the teacher for this course refer to related materials in other courses?								
1. Rarely	13	18%	11	18%	9	16%	6	11%
2. Never	3	4%	0	0%	3	5%	9	16%
3. Frequently	21	29%	19	31%	17	29%	19	34%
4. Very frequently	12	17%	13	21%	15	26%	8	15%
5. Sometimes	21	29%	17	28%	13	22%	12	22%
6. Does not apply to this course	2	3%	1	2%	1	2%	1	2%
22. Is class time well spent?								
1. Time is usually well spent	22	31%	31	54%	26	46%	14	25%
2. Class time is almost entirely wasted	2	3%	0	0%	8	14%	9	16%
3. Class time is frequently wasted	9	12%	2	3%	7	12%	21	37%
4. Almost all class time is well spent	33	46%	24	41%	11	19%	11	20%
5. Class time is wasted almost half the time	6	8%	1	2%	5	9%	1	2%
23. How clearly are your responsibilities in this course defined?								
1. I have a general idea of what is expected of me	14	20%	18	30%	18	31%	13	24%
2. I often am in doubt about what is expected of me	5	7%	2	3%	6	10%	19	35%
3. I seldom know what is expected of me	2	3%	2	3%	5	9%	2	4%
4. I usually know what is expected of me	23	33%	18	30%	15	26%	14	26%
5. I always know what is expected of me	26	37%	20	34%	14	24%	6	11%

APPENDIX G - (CONTINUED)

Question	Term I				Term II			
	P		S		P		S	
	No.	%	No.	%	No.	%	No.	%
24. Have grading policies thus far been fair?								
1. Fairer than most	27	39%	21	35%	22	38%	15	29%
2. Unfair to some	0	0%	4	7%	2	3%	6	11%
3. Unusually or exceptionally fair	19	27%	20	33%	4	7%	1	2%
4. Unfair to many	1	1%	2	3%	1	2%	4	8%
5. As fair as the average instructor's policies	23	33%	13	22%	29	50%	26	50%
25. There are many techniques for teaching such as lectures, lecturettes, discussions, films, panels, etc. Does this instructor								
1. almost never use the same method twice	0	0%	3	5%	1	2%	1	2%
2. teach with a variety of techniques	19	28%	19	30%	8	14%	9	16%
3. teach mostly by one method	23	33%	13	21%	40	68%	36	66%
4. teach mostly by one method but with some variation	25	36%	23	36%	8	14%	9	16%
5. teach about equally with a few methods	2	3%	5	8%	1	2%	0	0%

APPENDIX G - (CONTINUED)

Question	Term I				Term II			
	P		S		P		S	
	No.	%	No.	%	No.	%	No.	%
26. When we take tests or turn in written work, this instructor								
1. almost never returns papers	2	3%	0	0%	1	2%	2	4%
2. almost always returns papers with comments within a week	47	68%	47	80%	31	54%	20	37%
3. almost always returns papers within a week but without comments	18	26%	10	17%	20	34%	20	37%
4. keeps papers a long time and then returns them without comments	0	0%	2	3%	4	7%	7	13%
5. keeps papers a long time but finally returns them with comments	2	3%	0	0%	2	3%	5	9%
27. Compared with all teachers I have known previously, this instructor would rank in the								
1. upper third	54	77%	54	87%	30	52%	23	42%
2. middle third	11	16%	6	10%	20	34%	21	38%
3. lower third	5	7%	2	3%	8	14%	11	20%

APPENDIX G - (CONTINUED)

Question	Term I				Term II			
	P		S		P		S	
	No.	%	No.	%	No.	%	No.	%
28. What is your opinion as to how your instructor relates the content of the course to current events and to general cultural matters?								
1. Frequently	34	49%	29	50%	24	42%	26	47%
2. Never	0	0%	0	0%	3	5%	1	2%
3. Very frequently	24	34%	19	33%	25	44%	17	31%
4. Sometimes	11	16%	9	15%	3	5%	9	16%
5. Rarely	0	0%	1	2%	2	4%	1	2%
6. Does not apply to this course	1	1%	0	0%	0	0%	1	2%
29. How do you perceive your instructor?								
1. Slightly unfriendly	1	1%	1	2%	2	3%	2	4%
2. Impersonal	6	9%	6	10%	11	18%	15	27%
3. Very friendly	40	58%	33	55%	22	37%	17	31%
4. Hostile	9	13%	1	2%	3	5%	1	2%
5. Friendly	13	19%	19	31%	22	37%	20	36%
30. How well does he seem to know the subject?								
1. Adequately	3	4%	2	3%	9	15%	8	15%
2. Not at all well	0	0%	0	0%	1	2%	0	0%
3. Thoroughly and profoundly	60	88%	53	90%	36	62%	34	62%
4. Generally thorough and reasonably	4	6%	4	7%	12	21%	9	16%
5. Less than adequately	1	2%	0	0%	0	0%	4	7%

APPENDIX G - (CONTINUED)

Question	Term I				Term II			
	P		S		P		S	
	No.	%	No.	%	No.	%	No.	%
31. How clearly does your instructor present his subject matter?								
1. Average in clarity	25	35%	12	20%	25	42%	18	32%
2. Not at all clear in presentation	2	3%	2	3%	9	15%	8	15%
3. Above average in clarity	18	25%	18	29%	7	12%	9	16%
4. Very clear in presentation	23	33%	28	46%	10	17%	8	15%
5. Below average in clarity	3	4%	1	2%	8	14%	12	22%
32. How well does he adjust to your level of comprehension?								
1. Usually adjusts to my level of comprehension	49	71%	49	85%	27	48%	27	50%
2. Fluctuates above and below and rarely teaches at my level of comprehension	6	9%	3	5%	7	12%	5	9%
3. Generally teaches above my level of comprehension	13	19%	4	7%	20	36%	17	32%
4. Generally teaches below my level of comprehension	1	1%	2	3%	2	4%	5	9%

APPENDIX G - (CONTINUED)

Question	Term I				Term II			
	P		S		P		S	
	No.	%	No.	%	No.	%	No.	%
33. This instructor usually makes students feel								
1. calm and unconcerned	4	6%	2	3%	9	14%	6	13%
2. personally secure but not intellectually stimulated	6	8%	1	2%	5	8%	7	15%
3. fearful and threatened	0	0%	2	3%	6	9%	0	0%
4. personally secure but intellectually stimulated	28	40%	28	46%	20	31%	15	33%
5. somewhat ill at ease	2	3%	1	2%	9	14%	11	24%
6. comfortable and at ease	31	43%	27	44%	16	24%	7	15%
34. How much actual work outside of class do you do for this course?								
1. Very little for credits received	6	8%	5	8%	12	21%	6	11%
2. An excessive amount for the number of credits received	2	3%	3	5%	1	2%	2	4%
3. About average for the number of credits received	52	71%	38	59%	30	52%	35	62%
4. More than average for the number of credits received	2	3%	9	14%	6	11%	7	12%
5. Less than average for the number of credits received	11	15%	9	14%	8	14%	6	11%

APPENDIX - (CONTINUED)

Question	Term I				Term II			
	P		S		P		S	
	No.	%	No.	%	No.	%	No.	%
35. As you see it, which one of the following is the most important outcome of this course?								
1. Develops skills needed for further related work	12	17%	7	14%	7	12%	3	5%
2. Extends my general knowledge	11	16%	8	16%	24	41%	32	55%
3. Develops skills of creative and analytical thinking	25	37%	15	31%	15	25%	9	16%
4. Helps understand a previously little understood aspect of life	12	17%	16	33%	12	20%	10	17%
5. Develops competency needed for my vocation	9	13%	3	6%	1	2%	4	7%
36. Which of the following course activities did you find of greatest value?								
1. Class lectures	6	9%	10	17%	7	12%	7	13%
2. Text and outside reading	23	34%	7	12%	23	40%	22	40%
3. Laboratories or demonstrations	3	4%	3	5%	0	0%	1	2%
4. Class discussions	23	34%	29	50%	21	36%	11	20%
5. (Large) auditorium lectures	13	19%	9	16%	7	12%	14	25%

APPENDIX G - (CONTINUED)

Question	Term I				Term II			
	P		S		P		S	
	No.	%	No.	%	No.	%	No.	%
37. The content of this course is								
1. completely different from all other courses I have taken	34	50%	26	47%	25	46%	21	37%
2. different in most respects but similar in some to other courses I have taken	21	30%	19	35%	15	27%	18	31%
3. equally similar to and different from other courses I have taken	5	7%	5	9%	6	11%	8	14%
4. quite similar to other courses I have taken	7	10%	5	9%	9	16%	9	16%
5. almost exactly like other courses I have taken	2	3%	0	0%	0	0%	1	2%
38. How valuable are the texts assigned for this course?								
1. Of slight value	5	7%	8	14%	11	19%	21	38%
2. Of outstanding value	11	16%	8	14%	5	9%	1	2%
3. Of no value	2	3%	2	3%	6	10%	7	13%
4. Of great value	24	35%	13	23%	17	29%	7	13%
5. Of value	26	39%	26	46%	19	33%	19	34%
39. How valuable are the other assigned readings for this course?								
1. Cf value	32	47%	29	47%	31	54%	27	49%
2. Of outstanding value	3	4%	5	8%	3	5%	5	9%
3. Of slight value	21	31%	4	7%	10	18%	12	22%
4. Of no value	1	2%	3	5%	6	11%	7	13%
5. Of great value	11	16%	20	33%	7	12%	4	7%

APPENDIX G (CONTINUED)

Question	Term I				Term II			
	P		S		P		S	
	No.	%	No.	%	No.	%	No.	%
40. As a result of this course my skills of creative thinking have been								
1. increased	41	59%	37	61%	31	54%	26	45%
2. unaffected by the work in this course	9	13%	4	7%	12	21%	13	23%
3. increased significantly	10	15%	7	11%	5	9%	8	14%
4. actually decreased	0	0%	0	0%	1	2%	0	0%
5. remained about the same	9	13%	13	21%	8	14%	10	18%
41. As a result of this course my skills of analytical thinking have								
1. remained about the same	7	10%	5	8%	12	22%	15	28%
2. been unaffected by the work in this course	8	12%	3	5%	5	9%	5	9%
3. increased significantly	16	24%	18	28%	14	25%	13	24%
4. actually decreased	0	0%	1	2%	0	0%	0	0%
5. increased	36	54%	36	57%	24	44%	21	39%
42. Compared to other CB courses, the material in this course is								
1. much more difficult	4	6%	6	10%	4	7%	3	5%
2. somewhat more difficult	17	24%	25	43%	9	16%	19	35%
3. of average difficulty	33	48%	22	37%	32	56%	26	47%
4. somewhat less difficult	13	19%	5	8%	8	14%	6	11%
5. much less difficult	2	3%	1	2%	4	7%	1	2%

APPENDIX G - (CONTINUED)

Question	Term I				Term II			
	P		S		P		S	
	No.	%	No.	%	No.	%	No.	%
43. This course was most helpful in terms of								
1. supplying new information about behavioral science	19	27%	11	18%	22	36%	14	23%
2. helping me to better understand my own behavior	14	20%	14	23%	9	15%	15	24%
3. helping me to better understand the behavior of others	15	21%	20	33%	15	25%	19	31%
4. supplying knowledge about methods for analyzing human behavior	18	26%	12	20%	13	21%	10	16%
5. introducing me to new techniques of learning	4	6%	4	6%	2	3%	4	6%
44. This course was least helpful in terms of								
1. supplying new information about behavioral science	9	13%	4	7%	5	9%	5	8%
2. helping me to better understand my own behavior	9	13%	7	12%	9	16%	9	16%
3. helping me to better understand the behavior of others	5	7%	4	7%	2	3%	5	8%
4. supplying knowledge about methods for analyzing human behavior	14	20%	9	15%	9	16%	16	27%
5. introducing me to new techniques of learning	33	47%	35	59%	32	56%	24	41%

(Note: Questions 45 through 50 are not relevant to this study)

APPENDIX G - (CONTINUED)

Question	P		S	
	No.	%	No.	%
51. (Term I) As a textbook for CB 103, I consider Analysis of Behavior (by Holland & Skinner) to be				
1. clearly superior in terms of presentation & interest value to me	4	6%		
2. very good "	19	28%		
3. average "	17	24%		
4. not very good "	25	36%		
5. clearly inferior "	4	6%		
51S. (Term I) As a textbook for CB 103, I consider Development of Human Behavior (Dewey & Humber) to be				
1. clearly superior in terms of presentation & interest value to me			2	4%
2. very good "			17	31%
3. average "			20	37%
4. not very good "			8	15%
5. clearly inferior "			7	13%
52. (Term I) As a textbook for CB 103, I consider Human Behavior: A Programed Textbook (by Malpass, Martin, Givens, Hocutt) to be				
1. clearly superior in terms of presentation & interest value to me	19	27%		
2. very good "	29	42%		
3. average "	14	20%		
4. not very good "	8	11%		
5. clearly inferior "	0	0%		

APPENDIX G - (CONTINUED)

Question	P No.	P %	S No.	S %
52S. (Term I) As a textbook for CB 103, I consider Learning: Reinforcement Theory (Keller) to be				
1. clearly superior			13	23%
2. very good			20	36%
3. average			19	34%
4. not very good			4	7%
5. clearly inferior			0	0%
53S. (Term I) As a textbook for CB 103, I consider Primer of Freudian Psychology (Hall) to be				
1. clearly superior			13	22%
2. very good			26	43%
3. average			17	28%
4. not very good			4	7%
5. clearly inferior			0	0%
57. (Term I) The reprints used for supplementary readings were ____________ for getting important information				
1. extremely valuable	1	1%	12	21%
2. quite valuable	20	30%	21	36%
3. of average value	26	39%	18	31%
4. of little value	18	27%	5	9%
5. of practically no value	2	3%	2	3%

APPENDIX G - (CONTINUED)

Question	P		S	
	No.	%	No.	%
52. (Term II) As a textbook for CB 104, I consider Human Behavior: A Programed Textbook (by Fuson, Edmond, Allen, Lantz, Hocutt) to be				
1. clearly superior	3	6%	3	17%
2. very good	13	24%	4	22%
3. average	16	30%	7	39%
4. not very good	19	36%	1	5%
5. clearly inferior	2	4%	3	17%
57. (Term II) The book American Race Relations Today was				
1. very helpful	12	18%	1	5%
2. above average	13	20%	4	18%
3. average	32	49%	15	68%
4. below average	7	11%	2	9%
5. poor	1	2%	0	0%
58. (Term II) The book Communication was				
1. very helpful	5	9%	4	8%
2. above average	11	21%	13	25%
3. average	33	62%	25	49%
4. below average	4	8%	9	18%
5. poor	0	0%	0	0%

APPENDIX G - (CONTINUED)

Question	P No.	P %	S No.	S %
53. (Term I) Approximately 65-70 pages per week from Analysis of Behavior (Holland & Skinner) were assigned each week. I consider this amount				
1. far too much	9	14%		
2. more than I could reasonably handle	40	61%		
3. about right for the course	16	24%		
4. less than I could reasonably handle	1	1%		
5. far too little	0	0%		
54. (Term I) Approximately 25-30 pages per week, plus a reprint, were assigned from Human Behavior (Malpass et al). Including the reprint, I consider this amount				
1. far too much	1	2%		
2. more than I could reasonably handle	12	18%		
3. about right for the course	51	77%		
4. less than I could reasonably handle	2	3%		
5. far too little	0	0%		
54S. (Term I) Approximately 25-35 pages from Dewey & Humber, (or a paperback) and a reprint were assigned each week. I consider this				
1. far too much			0	0%
2. more than I could reasonably handle			18	31%
3. about right for the course			38	64%
4. less than I could reasonably handle			2	3%
5. far too little			1	2%

APPENDIX G - (CONTINUED)

Question	P		S	
	No.	%	No.	%
53. (Term II) In regard to the amount of reading in this course I feel that it was				
1. far too much	5	9%	2	4%
2. more than I could reasonably handle	12	22%	8	16%
3. about right for the course	34	62%	38	76%
4. less than I could reasonably handle	4	7%	2	4%
5. far too little	0	0%	0	0%
55. (Term I) If I were forced to choose between comparable textbooks, one published in the same form as				
1. Analysis of Behavior (Holland & Skinner) or	9	13%		
2. Human Behavior (Malpass et al)	58	87%		
I would choose (write 1 or 2)				
55S. (Term I) For some assignments, you were referred to				
1. Science of Behavior (Skinner) or to			34	62%
2. Personality: An Experimental Approach (Lundin)			21	38%
If I were forced to choose between them, I would select _______				

APPENDIX G - (CONTINUED)

Question	Term I				Term II			
	P		S		P		S	
	No.	%	No.	%	No.	%	No.	%
61. (Term I) The technique least valuable to 55. (Term II) me for learning material in the course was								
1. lecture	11	16%	14	32%	24	41%	10	19%
2. demonstrations	6	9%	12	28%	7	12%	5	10%
3. class discussions	24	35%	5	12%	16	28%	20	39%
4. assigned readings	17	24%	7	16%	7	12%	8	15%
5. quizzes & exams	11	16%	5	12%	4	7%	9	17%
62. (Term I) The technique most valuable to 56. (Term II) me for learning material in the course was								
1. lecture	16	20%	9	16%	5	8%	13	24%
2. demonstrations	6	7%	9	16%	2	3%	2	4%
3. class discussions	34	42%	31	55%	20	34%	17	31%
4. assigned readings	24	29%	6	11%	29	48%	18	32%
5. quizzes & exams	2	2%	1	2%	4	7%	5	9%
59. (Term I) I read								
1. all 8 of the reprints	17	25%	30	48%				
2. 6-7 reprints	25	36%	17	27%				
3. 4-5 reprints	18	26%	5	8%				
4. 2-3 reprints	8	12%	9	14%				
5. 0-1 reprint	1	1%	2	3%				

APPENDIX H

ANALYSIS OF VARIANCE, GRADE INDICES
PROGRAMED VS. STANDARD TEXTBOOK SECTIONS

Source	df	Ss	Ms	F
Instructor Index - Term I				
Between texts	1	1.647	1.647	0.203
Between instructors	1	26.577	26.577	3.272
Interaction	3	5.133	1.711	0.211
Within groups	138	1121.037	8.123	
Total	141	1154.394		
Instructor Index - Term II				
Between texts	1	0.615	0.615	0.083
Between instructors	1	160.301	160.301	21.721*
Interaction	3	2.356	0.785	0.106
Within groups	118	870.826	7.380	
Total	121	1034.098		
Instructor Index - Terms I and II				
Between texts	1	0.178	0.178	0.023
Between instructors	3	187.416	62.472	8.030*
Interaction	3	9.590	3.197	0.411
Within groups	256	1991.846	7.780	
Total	263	2189.030		
Examination Index - Term I				
Between texts	1	14.268	14.268	1.983
Between instructors	1	52.434	52.434	7.288*
Interaction	3	1.319	0.440	0.061
Within groups	138	992.909	7.195	
Total	141	1060.930		

* significant at .01 level

APPENDIX H - (CONTINUED)

Source	df	Ss	Ms	F
Examination Index - Term II				
Between texts	1	41.325	41.325	5.618**
Between instructors	1	0.625	0.625	0.085
Interaction	3	12.093	4.031	0.548
Within groups	118	867.990	7.356	
Total	121	922.033		
Examination Index - Terms I and II				
Between texts	1	50.062	50.062	6.887*
Between instructors	3	62.687	20.696	2.847**
Interaction	3	18.942	6.314	0.869
Within groups	256	1860.900	7.269	
Total	263	1992.591		
Total Index - Term I				
Between texts	1	6.162	6.162	0.252
Between instructors	1	4.350	4.350	0.178
Interaction	3	0.122	0.041	0.002
Within groups	138	3375.028	24.457	
Total	141	3385.662		
Total Index - Term II				
Between texts	1	52.028	52.028	2.203
Between instructors	1	140.921	140.921	5.968*
Interaction	3	- 7.555	- 2.518	-0.107
Within groups	118	2786.213	23.612	
Total	121	2971.607		
Total Index - Terms I and II				
Between texts	1	44.273	44.273	1.840
Between instructors	3	160.001	53.330	2.216
Interaction	3	6.470	2.157	0.090
Within groups	256	6161.241	24.067	
Total	263	6371.985		

* significant at .01 level   ** significant at .05 level

APPENDIX J

MEANS, VARIANCES, AND STANDARD DEVIATIONS
GRADE INDICES

Instructor Index

	Section	N	Mean	Variance	S.D.
Programed, Term I	08	36	8.778	8.863	2.977
	09	36	8.306	6.961	2.639
Term II	24	35	9.800	6.047	2.459
	25	29	7.207	12.241	3.499
Standard, Term I	10	37	9.351	9.012	3.002
	11	33	8.091	7.585	2.754
Term II	26	28	9.500	7.519	2.742
	23	30	7.533	4.120	2.030
Programed, Terms I & II		136	8.587		
Standard, Terms I & II		128	8.633		
All Experimental Sections		264	8.606		

Examination Index

	Section	N	Mean	Variance	S.D.
Programed, Term I	08	36	7.417	8.250	2.873
	09	36	8.333	7.771	2.788
Term II	24	35	7.371	7.358	2.713
	25	29	8.172	10.719	3.274
Standard, Term I	10	37	6.541	8.366	2.893
	11	33	8.030	4.093	2.023
Term II	26	28	6.786	6.397	2.529
	23	30	6.367	4.999	2.236
Programed, Terms I & II		136	7.809		
Standard, Terms I & II		128	7.055		
All Experimental Sections		264	7.386		

APPENDIX J - (CONTINUED)

Total Index

	Section	N	Mean	Variance	S. D.
Programed, Term I	08	36	16.194	29.533	5.435
	09	36	16.639	22.923	4.788
Term II	24	35	17.171	19.087	4.369
	25	29	15.379	41.672	6.456
Standard, Term I	10	37	15.892	27.099	5.206
	11	33	16.121	17.610	4.197
Term II	26	28	16.286	20.804	4.561
	23	30	13.900	14.093	3.754
Programed, Terms I & II		136	16.412		
Standard, Terms I & II		128	15.670		
All Experimental Sections		264	15.996		

REFERENCES

Cronbach, Lee J. What research says about programed instruction, NBA Journal, 51, 9: 45-47, December 1962.

Dewey, R. and Humber, W. J. The Development of Human Behavior. New York: Macmillan, 1951.

English, H. B. How psychology can facilitate military training: a concrete example, Journal of Applied Psychology, 26: 3-7, 1942.

Fuson, R., Allen, D., and others. Human Behavior, Volume II. Dubuque: Wm. C. Brown & Co., 1962, revised and published as Social Behavior: A Program for Self-instruction. (Edited by L. F. Malpass) New York: McGraw-Hill Co., 1964.

Galanter, E. H. (editor) Automatic Teaching: The State of the Art. New York: John Wiley & Sons, 1959.

Green, Edward J. The Learning Process and Programed Instruction. New York: Holt, Rinehart and Winston, 1962.

Hall, Calvin S. Primer of Freudian Psychology. Cleveland: World Publishing Co., 1954.

Holland, James. Personal communications (1961-1962) and an address given at University of South Florida, February 1963.

Holland, James and Skinner, B. F. The Analysis of Behavior. New York: McGraw-Hill Company, 1961.

Jensen, B. T. An independent-study laboratory using self-scoring tests, Journal of Educational Research, 43: 134-137, 1949.

Jevons, W. S. The Principles of Science. New York: Dover, 1958.

Keller, Fred S. Learning: Reinforcement Theory. New York: Random House, 1954.

Lumsdaine, A. A. and Glaser, Robert. (editors) Teaching Machines and Programmed Learning. Washington, D.C.: National Education Association of the U.S., 1960.

Malpass, L., Gilmore, A., Hardy, M., and Williams, C. Comparisons of Two Automated Teaching Procedures for Retarded Children, CRP #1267, U. S. Office of Education. Washington, D. C., 1963.

Malpass, Leslie F. and others. Human Behavior, Volume I. Dubuque: Wm. C. Brown & Co., 1962 (newly revised and published by McGraw-Hill Company. New York, 1963).

Markle, S. A Primer of Programed Instruction. New York: Center for Programed Instruction, 1961.

Mellan, I. Teaching and educational inventions, Journal of Experimental Education, 4: 291-300, 1936.

Ordahl, Louise E. and Ordahl, G. Qualitative differences between levels of intelligence in feeble-minded children, Journal of Psycho-asthenics, Monograph Supplement, 1, No. 2, 3-50, 1915. (quoted by Stolurow, L. M. in reference below).

Porter, D. Some Effects of Year-Long Teaching Machine Instruction. Automatic Teaching: The State of the Art. (Edited by E. H. Galanter) New York: John Wiley & Sons, 1959. Chap. 7, p. 85-90.

Pressey, S. L. A simple apparatus which gives tests and scores -- and teaches, School and Society, 23: 373-376, 1926.

____________ A machine for automatic teaching of drill material, School and Society, 25: 549-552, 1927.

____________ Further attempts to develop a mechanical teacher, American Psychologist, p. 1, 1946.

Raab, Earl and others. American Race Relations Today. New York: Doubleday Anchor, 1962.

Roe, A. and Moon, H. Analysis of course content for individual learning, Automated Teaching Bulletin, 1: 3-11, 1960.

Schramm, Wilbur. *Programed Instruction Today and Tomorrow*. Report to the Fund for the Advancement of Education, November, 1962.

Skinner, B. F. Programming verbal knowledge for automated instruction in schools and colleges, *American Psychologist*, 1958.

______________ Teaching machines, *Science*, 128: 969-77, 1958.

Stolurow, L. M. *Teaching by Machine*, Cooperative Research Monograph No. 6. Washington, D. C.: U. S. Government Printing Office, 1961.

Taber, J. I. and Glaser, R. Exploratory evaluation of a discriminative transfer learning program using literal prompts, *Journal of Educational Research*, 55: 508-12, 1962.

White, Leslie A. *The Evolution of Culture*. New York: McGraw-Hill Company, 1959.

Wright, C. R. *Mass Communications*. New York: Random House, 1959 (revised 1962).